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PUBLICATIONS OF THE SOUTHERN FOREST EXPERIMENT STATION, 1955 THROUGH 1961

Louis E. Punch

SOUTHERN FOREST EXPERIMENT STATION
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FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Contents

Contents (Continued)

PUBLICATIONS OF THE SOUTHERN FOREST EXPERIMENT STATION, 1955 THROUGH 1961

Compiled by

Louis E. Punch

Southern Forest Experiment Station

INTRODUCTION

This list supplements the 1955 revision of Occasional Paper 108, which cataloged the publications of the Southern Forest Experiment Station from 1921, when it was established, through 1954. Together, the two lists form a complete record of the Station's publications. Each is intended as the final compilation for the period it covers. Publications subsequent to 1961 will be recorded in future supplements.

The subject-matter classification is similar to that employed in 1955. Chief differences are that the headings **Range** and **Wildlife** have replaced **Grazing**, and that **Watershed** has been substituted for **Water.** Each title is recorded under only one heading. Since many publications touch on several topics, readers should consult all headings that appear related to their field of interest. The explanatory notes in the table of contents suggest some main lines of cross reference, and the index of authors may also be helpful in this respect.

Entries are accompanied by brief abstracts. Where two or more publications contain virtually the same information, the abstracts refer to the most comprehensive one, which generally will also be the most readily available. An asterisk (*) preceding an entry indicates that reprints or copies are available on request; the Station's address is Federal Building, 701 Loyola Avenue, New Orleans 12, La.

A few items that were overlooked in 1955 are recorded now.

MANAGEMENT OF ESTABLISHED STANDS

GENERAL

Briegleb, P. A.
1956. SOUTH'S TIMBER CROP COULD BE DOUBLED. Banking 48 (11): 87.
"In the South . . . opportunities for increasing forest growth in response to mounting demand are outstanding, but it will take a lot of work to capture this promise. Bankers are in a good position to continue to take an important part in the jobs ahead."

* Maple, W. R.
1957. REDCEDAR GROWTH IN ARKANSAS OZARKS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 112.
Improvement cutting and hardwood control stimulated an eastern redcedar stand of 161 cubic feet per acre to grow to 214 cubic feet in 3 years, an increase of 10 percent annually.

* Williston, H. L.
1959. NORTH MISSISSIPPI'S BLUE-RIBBON BALD-CYPRESS STAND. South. Lumberman 199(2489): 144-145, illus.
The stand seeded in between 1875 and 1890 on a moist site. Before a recent thinning it averaged 52,000 board feet per acre. Form class is about 80.

PINE-HARDWOOD

* Beaufait, W. R.
1957. PINE OUTGROWS SWEETGUM IN UPLANDS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 109.
On a dry upland site in south Mississippi, loblolly pines of pulpwood size were found to be growing half again as fast in volume as sweetgums.

* Burton, J. D.
1960. VIRGINIA PINE GROWTH POTENTIAL ON THE CUMBERLAND PLATEAU. South. Lumberman 200(2501): 44.
When clearcut at age 72 years, a stand on poor soil contained 25 MBF (International rule), plus 15 cords in tops and small stems. The average acre supported 233 stems, with a basal area of 152 square feet.

* Croker, T. C., Jr.
1955-61. ANNUAL CUTTING RECORDS, ESCAMBIA FARM FORESTRY FORTY. U. S. Forest Serv. South. Forest Expt. Sta. 4 pp. each.
Volume and value of timber harvested, in eighth through fourteenth annual cuts, on a 40-acre tract of longleaf and slash pine in southern Alabama.

* Davis, V. B.
1955. DON'T KEEP LONGLEAF SEED TREES TOO LONG! U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 98.
Longleaf pine seed trees not only keep their offspring small and vulnerable to fire, but their fallen needles increase the fuel supply.

* Derr, H. J., and Enghardt, Hans.
1957. SOME FORESTRY LESSONS FROM HURRICANE AUDREY. South. Lumberman 195(2441): 142-144, illus.
Slash pine was hit harder than loblolly or longleaf, chiefly because it has been widely planted on poorly drained flatwood sites, where a high degree of windfirmness cannot be expected. Much of the loss was in windthrow of dominant and codominant trees. Stands below merchantable size were damaged mainly by breakage of fusiform-infected stems. Dense stands were harmed less than some that had recently been heavily thinned.

* Enghardt, Hans.
1960. THINNING PLANTED LOBLOLLY PINE. Forests and People 10(2): 36, 43, illus.
A plantation in central Louisiana was thinned to various densities at ages 20, 25, and 30 years. Stocking of 90 to 100 square feet of basal area per acre produced the most cordwood or sawtimber. For very close spacings, such as 4 by 4 feet, stocking of 80 to 90 square feet appears best when high cubic-volume growth is the goal.

* Gibbs, C. B.
1958. MANAGING A SMALL FOREST IN EAST TEXAS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 163, 7 pp., illus.
Ten years of management have transformed a wild woodland into a profitable forest. Costs averaged 95¢ per acre annually and net cash returns $3.20.

* Grano, C. X.
1956. GROWING LOBLOLLY AND SHORTLEAF PINES IN THE MIDSOUTH. U. S. Dept. Agr. Farmers' Bul. 2102, 25 pp., illus.
Even heavily cut stands can be rapidly brought back into production. The first pages show the forest owner how to size up his woodland and diagnose its needs. Later sections give recommendations on protection, control of unwanted trees, thinning and pruning, and harvesting and marketing.

1957. GROWTH OF LOBLOLLY PINE SEED TREES IN RELATION TO CROWN DENSITY. Jour. Forestry 55: 852.
Seed-trees with dense crowns make faster diameter growth than those with less foliage, but height growth and crown expansion tend to be independent of crown density.

1961. DOES PRUNING PAY OFF? Forest Farmer 20(12): 10-11, illus.
A study with pine in south Arkansas indicates that, if pruning is to be worth the expense, it should be restricted to the fastest growing trees and those most likely to be carried to maturity, should begin when the trees are 3 to 5 inches in diameter, and should be followed by thinnings that are frequent and heavy enough to promote diameter growth of 3 inches per decade.

* Guttenberg, Sam.
1956. LOBLOLLY GROWS DESPITE DROUGHT AND BEETLES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 103.
Net growth rate ranged from 5 to 9 percent.

Koshi, P. T.
1956. THE WATER RELATIONS OF TREES. Paper read at "Water for Texas" Conf., Tex. A and M Col., 6 pp.
Some of the rain that falls on the forests of east Texas could be made available for irrigation or

industrial use, but at a high price in erosion and sedimentation. "Considering that east Texas pine lands earn something like $10 per acre per year at their natural job of growing pine trees, I think our objective should be to use in place just as much of the rain that falls on them as possible."

* McCLURKIN, D. C.

1958. SOIL MOISTURE CONTENT AND SHORTLEAF PINE RADIAL GROWTH IN NORTH MISSISSIPPI. Forest Sci. 4: 232-238, illus.

In 19-year-old plantations on loessial soils, strong interrelations were found between radial growth and elapsed days of the growing season, available soil moisture, soil temperatures, and interactions of these variables.

* ———

1961. SOIL MOISTURE TRENDS FOLLOWING THINNING IN SHORTLEAF PINE. Soil Sci. Soc. Amer. Proc. 25: 135-138, illus.

Thinning 19-year-old plantations in north Mississippi increased soil moisture during middle and late summer, and thus speeded growth and extended the growing period. Diameter growth slackened when depletion was rapid.

MANN, W. F., JR.

1955. PRUNING RAISES PINE PROFITS. Prog. Farmer (Miss.-Ark.-La. ed.) 70(1): 24-25, illus.

Suggestions for pruning southern pines.

* MAPLE, W. R., and MESAVAGE, CLEMENT.

1958. REMARKABLE SHORTLEAF PINE STAND. Jour. Forestry 56: 290-291, illus.

At age 90, this stand contains 34 MBM (Int. rule) per acre. Mean annual growth rate, including some salvaged mortality, has been 425 board feet per acre. The average tree is about 13 inches d.b.h.; excessive stocking has reduced diameter growth and contributed to heavy mortality.

* ——— and SMITH, W. S.

1959. MANAGEMENT OF SMALL WOODLAND TRACTS IN THE ARKANSAS OZARKS. U. S. Forest Serv. South. Forest Expt. Sta., 4 pp.

Five small tracts in Newton County were placed under management in 1953. Though understocked, they have grown at rates of 3.7 to 8.0 percent annually.

MIGNERY, A. L.

1955. SEVENTH ANNUAL FOREST FIELD DAY, STEPHEN F. AUSTIN EXPERIMENTAL FOREST, NACOGDOCHES, TEXAS. U. S. Forest Serv. South. Forest Expt. Sta., 6 pp.

Products with a stumpage value of nearly $2,000 have been cut since 1947 from a 67-acre area managed like a farm forest.

MOYLE, R. C.

1955. "SHOULD I SELL THIS POLE?" READ THIS BEFORE YOU DO! Forest Farmer 15(2): 11, illus.

A reminder that pole trees increase in value as they improve in length and top diameter.

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1956. LEAPING LOBLOLLY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 105. *Also in* South. Lumberman 193(2417): 186.

In a 62-year-old stand on a good site, growth has been 2.2 cords per acre annually on a plot kept thinned to 120 square feet of basal area per acre, 2.1 on a plot thinned to 110 square feet, and 1.5 on unthinned trees.

* MUNTZ, H. H.

1955-57. ANNUAL CUTTING RECORDS, BIRMINGHAM FARM FORESTRY FORTY. U. S. Forest Serv. South. Forest Expt. Sta., 4 pp. each.

Volume and value of timber harvested, in eighth through tenth annual cuts, on a 40-acre tract of pine and hardwood in north-central Alabama.

* REYNOLDS, R. R.

1955. MANAGED GROWTH. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 142, 16 pp., illus.

Results of the first 15 years of management on a 958-acre tract of loblolly and shortleaf pine on the Crossett Experimental Forest, in southern Arkansas.

* ———

1955. PINE GROWTH UNDER MANAGEMENT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 100.

See preceding entry.

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1956. MANAGEMENT OF PINE-HARDWOOD STANDS IN SOUTH ARKANSAS. La. State Univ. Fifth Ann. Forestry Symposium Proc. 1956: 39-46.

Review of work on the Crossett Experimental Forest shows that "so far we have only barely touched on the outer edges of the possibilities of increased timber production to be had through research and good management."

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1957. INTENSIVE TIMBER MANAGEMENT CAN BE PROFITABLE IN THE SOUTH. Soc. Amer. Foresters Proc. 1956: 119-121.

"Studies indicate that a yield of 500 board feet per acre per year can easily be had from all-aged pine stands with a good distribution of size classes (sites equal to 80 or better)."

* ———

1958. DROUGHT CAN BE COSTLY TO TIMBER-LAND OWNERS. South. Lumberman 196(2447): 32-33, illus.

The drought of 1952-1955 cost pine timber owners in southern Arkansas and northern Louisiana something like 16 million dollars yearly in lost growth. As dry years are more numerous than years of normal rainfall, stand improvement measures that will reduce competition for water should pay dividends.

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1958. PROFITS FROM GROWING LARGER TREES. AT-FA Jour. 20(12): 6.

Forest owners often miss high profits by cutting trees as soon as they reach minimum sawtimber size.

* ———

1959. EIGHTEEN YEARS OF SELECTION TIMBER MANAGEMENT ON THE CROSSETT EXPERIMENTAL FOREST. U. S. Dept. Agr. Tech. Bul. 1206, 68 pp., illus.

Costs, returns, and silvicultural observations from a 958-acre understocked forest of second-growth pine and hardwood. Original stocking of pine averaged 4,669 board feet per acre. Though selection cuts removed nine-tenths of this volume, annual pine growth per acre has averaged 405 board feet for sawtimber-size trees and 74 cubic feet for all pines 4 inches and larger in d.b.h.

* ——— and RAWLS, I. W.

1955-61. ANNUAL CUTTING RECORDS, CROSSETT FARM FORESTRY FORTIES, CROSSETT EXPERIMENTAL FOREST. U. S. Forest Serv. South. Forest Expt. Sta., 4 pp. each.

Eighteenth through twenty-fourth annual harvests from the Good Forty, and seventeenth through twenty-third from the Poor Forty.

* Russell, T. E., and Derr, H. J.
1956. LONGLEAF HEIGHT UNAFFECTED BY STAND DENSITY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 101. *Also in* The Unit, News Letter 62, p. 6.
At age 20 years, pines in a plantation averaging 404 trees per acre were as tall as those in lighter stands.

* Siegel, W. C.
1961. LOBLOLLY PLANTERS THIN EARLY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 135. *Also in* Amer. Tree Farmer and Forestry Digest, Jan.-Feb. 1962, p. 8. *Also in* Forest Farmer 21(12): 24. 1962.
Eight out of ten plantations in the region around Shreveport are thinned by age 15 years. By age 18, virtually all have been thinned once and half of them twice.

* Smith, L. F.
1955. DEVELOPMENT OF SECOND-GROWTH LONGLEAF PINE IN SOUTH MISSISSIPPI. Jour. Forestry 53: 648-649, illus.
Observations on some of the oldest longleaf plots in existence show that second-growth stands can produce a cord of wood per acre annually.

* ———
1956. EARLY RETURNS FROM A SLASH PINE PLANTATION. South. Lumberman 193(2417): 212-213, illus.
Though it suffered heavy early mortality and was also damaged by fusiform rust, a slash pine plantation in south Mississippi has grown more than 1 cord per acre annually since its establishment in 1941. Some portions of it have grown more than 3 cords per acre annually.

* Stephenson, G. K.
1956. MORTALITY IN THE WOODPILE. South. Lumberman 193 (2417): 220-221, illus.
The droughts of recent years have greatly increased pine mortality in east Texas. Landowners are becoming interested in methods of salvaging the losses.

Sternitzke, H. S.
1957. AUDREY'S TIMBER TOLL. Forests and People 7(4): 51.
In the Louisiana parishes that suffered the main damage, Hurricane Audrey broke and uprooted a total of 425,000 cords of pine and hardwood growing stock. This figure includes 85 million board feet in sawtimber trees. Hardwoods suffered 8 times as much damage as pines.

* Williston, H. L.
1957. POLE GROWER'S GUIDE. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 153, 34 pp., illus.
Silvicultural considerations facing landowners who contemplate producing poles, and a compilation of volume tables, specifications, and references.

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1958. COST OF PRUNING LOBLOLLY AND SHORTLEAF. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 114.
See next entry.

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1959. COST OF PRUNING LOBLOLLY AND SHORTLEAF PINE. South. Lumberman 198(2470): 43.
In north Mississippi, 17-year-old loblolly pines were pruned to a height of 17 feet for 11 cents per tree; 23-year-old shortleaf cost 7 cents apiece to prune, chiefly because they had fewer and smaller limbs.

* Yocom, H. A.
1960. DROUGHT SLOWS TIMBER GROWTH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.
Growth in a pine-hardwood forest near Birmingham, Alabama, was reduced at least half by the drought of 1952-1956.

* Zahner, Robert.
1955. PLANTATION EXHAUSTS SOIL WATER RAPIDLY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 95.
During June 1954, a young loblolly pine plantation in south Arkansas removed water from the ground at twice the rate that normal rainfall would have replenished it.

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1955. SOIL WATER DEPLETION BY PINE AND HARDWOOD STANDS DURING A DRY SEASON. Forest Sci. 1: 258-264, illus.
In southeastern Arkansas, soils of two well-forested areas of different species, but similar in climate, stocking, and site, were depleted of water at approximately the same rate.

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1956. EVALUATING SUMMER WATER DEFICIENCIES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 150, 18 pp., illus.
Thornthwaite's concept of potential evapo-transpiration, combined with an understanding of water needs and supplies, can be used to estimate water deficiencies suffered by trees. This paper presents background material and data for evaluations on upland pine-hardwood forests of the Midsouth.

* ———
1956. ROOT DEVELOPMENT OF THINNED PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 101.
Roots and crowns expanded with equal vigor after a young loblolly pine plantation was heavily thinned.

* ———
1956. TAKES WATER TO MAKE WOOD. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 104. *Also in* The Unit, News Letter 65, p. 9.
In the Midsouth, about 750,000 gallons of soil water are needed to grow a cord of pine pulpwood.

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1956. THE TIMBER GROWER'S STAKE IN WATER. Forest Farmer 16(2): 9, 34, illus.
In the South, water supplies rarely are adequate for optimum forest growth throughout any growing season. Conserving the moisture stored in the soil—by timely thinnings and removal of cull trees and undesirable brush—has the same effect as additional rain.

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1958. HARDWOOD UNDERSTORY DEPLETES SOIL WATER IN PINE STANDS. Forest Sci. 4: 178-184, illus.
Depletion by well-stocked, even-aged stands of shortleaf and loblolly pine with and without hardwood understories was measured through four summers in south Arkansas. Midsummer water loss was about 25 percent faster on plots with an understory.

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1958. SEPTEMBER RAINS BRING PINE GROWTH GAINS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 113.
In southern Arkansas, 30 percent of the 1957 growth of a loblolly pine stand followed soil-moisture recharge by unusual September rains.

* ———
1959. CONTROLLED SOIL-MOISTURE EXPERIMENTS IN FOREST TREE-WATER RELATIONS First North Amer. Forest Soils Conf. Proc., pp. 12-19, illus. Michigan State Univ.
Field techniques—irrigation, crown and root pruning, shelters, and large containers—to help regulate soil moisture available to individual trees too large to be kept in a conventional greenhouse.

* ———— and Whitmore, F. W.
1960. early growth of radically thinned loblolly pine. Jour. Forestry 58: 628-634, illus.
A plantation in south Arkansas was thinned in 1954, when the trees were 9 years old. Where all but 100 crop trees per acre were removed, diameter growth was 4.3 inches in 5 years. Controls grew 1.9 inches when thinned to 85 square feet of basal area at 3-year intervals. The heavily thinned trees made diameter growth into late fall each year, while the controls ceased by midsummer, when they had depleted soil moisture. Height growth was not stimulated.

HARDWOODS

* Beaufait, W. R., and Johnson, R. L.
1956. timber better as result of work of 15 years ago. Miss. Farm Res. 19(11): 1-2, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 547, 2 pp., illus.
An improvement cut in 1940 markedly helped the growth and quality of a depleted stand of bottomland hardwoods.

* Briegleb, P. A., and McKnight, J. S.
1960. the place of hardwoods in forest management. The Unit, News Letter 83, pp. 10-11.
More than a third of southern forest land will probably yield its greatest multiple benefits if devoted permanently to the production of hardwoods.

Broadfoot, W. M.
1958. a method of measuring water use by forests on slowly permeable soils. Jour. Forestry 56: 351.
Water was impounded in winter on an area of Sharkey clay supporting a well-stocked hardwood forest. The daily drop in lake level was measured during spring and summer and designated evapotranspiration. Evaporation loss, as measured from a pan anchored in the lake, was then subtracted. The difference was the water used by the forest, as seepage through the Sharkey clay was deemed negligible.

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1958. study effects of impounded water on trees. Miss. Farm Res. 21(6): 1-2, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 595, 2 pp., illus. *Also in* Miss. Game and Fish 21(12): 6, 10, illus.
In fall and early winter, many landowners build temporary lakes in hardwood forests, usually to attract migrating waterfowl. Study of 16 such shallow impoundments in Arkansas and Mississippi showed that they increase the amount of water going into soil storage, and thus may benefit trees during a dry summer. The water must be released each spring, before tree growth begins. Continuous impoundment kills some species in one or two years, and all trees in four years.

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1960. soil-water shortages and a means of alleviating resulting influences on southern hardwoods. *In* South. Forest Soils. La. State Univ. Eighth Ann. Forestry Symposium Proc. 1959: 115-119.
See preceding entry.

Grano, C. X.
1957. pruning-wound closure on southern red oak. Jour. Forestry 55: 669.
Five years after some southern red oaks were pruned, 85 percent of the wounds had healed over completely. Originally the wounds averaged 1.2 inches in diameter, ranging from 0.4 to 3.6 inches. They did not serve as an important entrance for rot.

* Johnson, R. L.
1958. bluff hills—ideal for hardwood timber production. South. Lumberman 197(2465): 126-128, illus.
Suggestions for improving forests in the loessial bluffs that lie east of the Mississippi River. The Southern Forest Experiment Station has established the Bluff Experimental Forest to conduct intensive research on the management of these sites—which are potentially among the Nation's best sources of prime hardwoods.

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1959. pruning cottonwood. South. Lumberman 198(2473): 28-29, illus.
Preliminary studies in the Mississippi Delta suggest that pruning should not reduce the live crown to less than half the total height of the tree. Most wounds made by the pruning of branches 2½ inches in diameter (at a point 2 inches from the bole) healed in two growing seasons.

* ————
1961. pruning cottonwood and willow oak. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 136.
Cottonwood branches up to 3 inches in diameter may be pruned without serious danger from rot, insects, or epicormic branching. Willow oaks are prone to branch, some individuals more than others.

Koshi, P. T.
1957. diameter growth of post oak best in sparse stands. Jour. Forestry 55: 847.
Post oak stands in Robertson County, Texas, were thinned from 65 square feet of basal area per acre to 39, 26, and 13 square feet. " . . . In this dry area, where growth is slow at best, the trees were able to benefit from thinning to exceptionally sparse densities."

* ————
1959. soil-moisture trends under varying densities of oak overstory. U. S Forest Serv. South. Forest Expt. Sta. Occas. Paper 167, 12 pp., illus.
The trees were post oaks, on Susquehanna-like soils in Texas. Either grass or trees were capable of withdrawing all available moisture from the upper 24 inches of soil. Trees drew from the upper and lower horizons simultaneously, while grasses tended to exhaust the upper horizons first. Thinning and clearing of the oaks reduced the number and duration of periods of moisture stress.

McKnight, J. S.
1956. thinning our young gum. Forests and People 6(3): 28-29, illus.
In recent years the demand for sweetgum pulpwood has made it feasible for landowners to thin their young gum stands commercially. Studies of thinning intensities have been installed, but until they yield results the best advice is to leave about 70 square feet of basal area per acre.

* ————
1957. black willow—hints for management. Forests and People 7(3): 30-31, 50, illus.
Pending further study, light thinning, removing about ¼ of the volume of the stand, appears the safest initial cut in dense stands on the wettest river sites. In subsequent cuts, or on sites dry enough for the trees to be reasonably windfirm, removal of nearly half the volume may give best growth and least mortality. The poorest trees should be cut first.

* McKnight, J. S.

1958. THINNING STANDS OF WATER OAKS. La. State Univ. Seventh Ann. Forestry Symposium Proc. 1958: 46-50.
Water oaks produce best timber when grown in dense, nearly even-aged stands. Improvement cutting and thinning for release promote rapid growth, but tend to stimulate epicormic branching on suppressed and intermediate trees. This limbiness is not a serious problem on vigorous dominant and co-dominant trees.

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1959. BRIGHT FUTURE FOR HARDWOODS. Miss. Farmer 7(5): 10-11, illus.
Possibilities and elementary principles of managing southern hardwoods.

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1959. PROTECT AND MANAGE GOOD SOUTHERN HARDWOODS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 169, 12 pp., illus. Other editions published in cooperation with Ala. Dept. Conserv., Div. Forestry; Ark. State Forestry Comn.; Ga. Forestry Comn., Ga. Forest Res. Council, Ga. Forestry Assoc.; La. Forestry Comn. (Bul. 12 of La. Forestry Comn.); and Miss. Forestry Assoc., Miss. Forestry Comn., Delta Council.
Booklet illustrating benefits and principles of hardwood management.

——— and Gantz, H. L.

1957. HEAVY, LIGHT OR NO CUTTING? Farm and Ranch (Southwest ed.) 87(6): 11, illus.
Improvement cuts made 15 years ago have greatly improved the quality of timber being grown in a once-depleted forest of bottom-land hardwoods.

* Maisenhelder, L. C., and Heavrin, C. A.

1957. SILVICS AND SILVICULTURE OF THE PIONEER HARDWOODS—COTTONWOOD AND WILLOW. Soc. Amer. Foresters Proc. 1956: 73-75.
Knowledge of the silvics of these two species is probably more complete than for most other commercially important hardwoods, good sites are abundant, and the trees grow exceptionally fast.

Putnam, J. A.

1955. GROWING HARDWOOD TREES AS A CROP. Forest Farmer 15(1): 6-7, 30-31, illus.
Describes a typically abused bottom-land hardwood stand and charts its potential development through intermediate cutting to a desirable structure.

* ———

1957. OPPORTUNITIES AND PROBLEMS IN THE SILVICULTURE OF SOUTHERN HARDWOODS. Soc. Amer. Foresters Proc. 1956: 62-64.
In southern hardwood silviculture we have the opportunity of putting a large part of the better class of our land to its best economic use, that of raising valuable timber of a class of which there is a threatening shortage, at a rate of up to 500 board feet, plus six-tenths of a cord . . . per acre per year. . . . The key to the situation is the generation of sufficient intelligent interest and determination amongst ourselves. The next step will be . . . to put into practice the rudimentary principles of management that we already know, and simultaneously to expand our scientific knowledge.

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1959. INITIAL MANAGEMENT OF HARDWOODS. Forest Farmer (Seventh Manual ed.) 18(8): 67-69, illus. *Also in* (Eighth Manual ed.) 19(7): 77-79, illus. 1960. *Also in* (Ninth Manual ed.) 20(7): 50-52, illus. 1961. *Also in* (Tenth Manual ed.) 21(7): 44-46, illus. 1962.
See next entry.

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1959. INITIAL MANAGEMENT OF HARDWOODS. Two parts. Forest Farmer 18(10): 6-8, 18-19, illus.; 18(11): 10-12, 18, illus.
Discussion of management in the light of hardwood utilization and marketing practices.

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1959. MANAGEMENT OF SOUTHERN HARDWOOD FORESTS RELATIVE TO THE SUPPLY OF RAILROAD STOCK. Cross Tie Bul. 40(2): 18-19, 22, 24-27.
" . . . When the present surplus of low grade timber on marginal or nonproductive sites is liquidated and when we get to managing the productive stands in earnest, it will be necessary to depend upon such productive stands for the permanent supply of railroad and construction material."

* ——— Furnival, G. M., and McKnight, J. S.

1960. MANAGEMENT AND INVENTORY OF SOUTHERN HARDWOODS. U. S. Dept. Agr. Agr. Handb. 181, 102 pp., illus.
The lower Mississippi Valley, lower Piedmont, and southern Coastal Plain from Virginia to Texas have long been recognized by the hardwood industries as the "southern hardwood territory." The moister parts of this area are better adapted to hardwoods than to pines, and about 45 million acres should be managed for continued hardwood production. This handbook brings together what is known about the management of these forests for timber production.

* Williston, H. L.

1959. INUNDATION DAMAGE TO UPLAND HARDWOODS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 123.
In north-central Mississippi, continuous flooding for 21 days during the summer caused greater mortality in yellow-poplar than in red and white oak, blackgum, sweetgum, and red maple. Trees were pole-size and larger.

Woods, F. W., and Shanks, R. E.

1957. REPLACEMENT OF CHESTNUT IN THE GREAT SMOKY MOUNTAINS OF TENNESSEE AND NORTH CAROLINA. Jour. Forestry 55: 847.
Blight-killed chestnuts are being replaced by various species of oak, mainly Quercus prinus *and* Q. rubra.

CONTROL OF UNWANTED VEGETATION

* Crawford, H. S., Jr.
1959. 2,4,5-T on ozark hardwoods. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 120.
When applied in frills, 2,4,5-T rapidly killed crowns of unwanted oaks, hickories, and gums, but did not adequately suppress sprouting.

* ———
1960. effect of aerial 2,4,5-T sprays on forage production in west-central arkansas. Jour. Range Mangt. 13: 44.
Grass increased during the first and second years after scrub oaks and hickories were killed. Yield of forbs declined sharply in the first year and rose the second, but much of the increase was in plants of low palatability to both cattle and deer. Browse declined with the death of the hardwoods, but recovered with the development of blueberry, grape, and other plants preferred by deer.

* ———
1960. single aerial spray with 2,4,5-T effective on hardwoods in west-central arkansas. Ark. Farm. Res. 9(3): 6, illus.
Dosage per acre was 0.5 gallon of the iso-octyl ester, mixed with 1 gallon of diesel oil and 3.5 gallons of water. Basal sprouting was negligible and grass yields increased.

Croker, T. C., Jr.
1959. scalping stimulates longleaf growth. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 121.
On a sandy ridge in southern Alabama, scalping the seedbed just before seedfall markedly increased the number of longleaf pine seedlings that began height growth in their third year.

* Davis, J. R.
1956. 2,4,5-T—low-volatile esters effective. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 102.
See Davis, 1959.

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1958. basal spray with 2,4,5-T for winter hardwood control in east texas. Jour. Forestry 56: 349.
In applications during early winter, 2,4,5-T in diesel oil (23.5 lbs. ahg) controlled small sweetgum stems much better when used as a basal spray than when brushed on freshly cut stumps. Better results on stumps would be expected from applications during growing season.

* ———
1958. diluted 2,4,5-T more lethal than undiluted in east texas. Jour. Forestry 56: 516.
For inhibiting sprouts from freshly cut post oak and sweetgum, 2,4,5-T was more effective when diluted with diesel oil than when undiluted, provided that the amount of acid equivalent in diluted and undiluted doses was equal.

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1959. low-volatile 2,4,5-T effective as basal spray. Jour. Forestry 57: 851
A low-volatile ester was as good as a high-volatile ester in killing sweetgum.

* ——— and Duke, W. B.
1955. quick, bunyan, the needle! South. Lumberman 191 (2393): 171-172, illus.
Labor and other costs of using a tool designed to inject a tree-killing chemical solution into small hardwoods.

* Dumbroff, E. B.
1960. aerial foliage sprays fail to eradicate scrub oaks on florida sandhills. Jour. Forestry 58: 397-398.
Best results on oaks—but still inadequate for pine establishment—were achieved with propylene glycol butyl ether ester of 2-(2,4,5-TP) at 3 pounds acid equivalent per acre in an oil-water carrier. Grasses, which are as detrimental as scrub trees on these dry sites, were little affected by any phytocide.

Duncan, D. A., and Whitaker, L. B.
1958. deadening scrub hardwoods livens up forage. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 118.
In central Louisiana, deadening of hardwoods increased the protein and phosphorus content of the native forage, as well as the quantity of herbage per acre.

* Farrar, R. M., Jr.
1961. aerial application of four silvicides in south alabama. South. Weed Conf. Proc. 14: 198-201.
The butoxy ethanol ester of 2,4,5-T proved superior to three newer formulations for controlling scrub oaks with minimum damage to longleaf pine seedlings. Chemicals were applied at 2 pounds acid equivalent per acre.

* Ferguson, E. R.
1958. plows for woods planting. South. Lumberman 197 (2465): 92-93, illus.
A V-shaped brush plow, mounted on front of the tractor pulling the planting machine, clears a planting strip by severing and uprooting small hardwoods, and throwing them into windrows.

* ———
1958. response of planted loblolly pines to reduction of competition. Jour. Forestry 56: 29-32, illus.
During dry years, first-year survival was best where competing hardwoods and grasses had been controlled, but during a year of well-distributed rainfall release had little effect on survival. Height growth increased roughly in proportion to the degree of release.

* ———
1959. furrowing increases first-year survival of planted pine in texas. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 124.
In a year of occasional droughts, seedlings that had been planted in shallow furrows survived better than those competing with undisturbed Bermuda grass.

* ——— and Duke, W. B.
1956. competition affects first-year growth. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 106.
Reduction of competition prior to sowing improved the height growth of loblolly seedlings in east Texas.

* Gibbs, C. B.
1959. AMINES OF 2,4-D HOLD PROMISE FOR HARDWOOD CONTROL. Down to Earth 15(3): 6.
The concentrated amine, applied in tree injector cuts, killed tops of 78 percent of the post oaks to which it was applied, and 58 percent of the sweetgums. Oaks did not sprout at all, and sprouts from sweetgums were small and few. The tests were in east Texas.

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1960. ISO-OCTYL ESTER OF 2,4,5-T FOR HARDWOOD CONTROL. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 126.
See next entry.

* ———
1960. ISO-OCTYL ESTER OF 2,4,5-T IN HARDWOOD CONTROL. Weeds 8: 462-463.
Injections of 40-pound solutions killed sweetgums and oaks in east Texas; 20-pound concentrations appeared suitable for oaks alone.

* Grano, C. X.
1955. BEHAVIOR OF SOUTH ARKANSAS OAKS GIRDLED IN DIFFERENT SEASONS. Jour. Forestry 53: 886-888, illus.
Fastest crown kill and least resprouting were secured when girdling was done in the spring. May seemed to be the best month.

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1955. GIRDLE YOUR WEED TREES IN THE SPRING. Forest Farmer 14(4): 6, 16, illus.
See preceding entry.

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1955. KILL WEED TREES IN SPRING. Prog. Farmer (Miss.-Ark.-La. ed.) 70(3): 103.
See second entry above.

* ———
1957. BULLDOZING TO CONTROL HARDWOOD BRUSH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 109.
In south Arkansas, bulldozing to mineral soil controlled hardwood brush better than bulldozing at groundline followed by burning or by spraying with 2,4,5-T.

———
1957. WHEN SHOULD CHEMICAL HARDWOOD CONTROL BE DONE? Forest Farmer 16(13): 12, illus.
In tests of southern red oaks in south Arkansas, spring was the best time to use 2,4,5-T in frills, but results at other seasons were also good.

* ———
1958. RESPONSE OF SOUTHERN RED OAK TO SEASONAL APPLICATIONS OF 2,4,5-T. Jour. Forestry 56: 140-141, illus.
In south Arkansas, spring applications of a 1-percent water mixture of the low-volatile esters of 2,4,5-T in frills gave faster crown kill and better sprout control than did application at any other season. Regardless of season of application, however, all crowns were dead two years after treatment. Sprouts also died off to negligible proportions.

* ———
1961. HARDWOOD REOCCUPATION OF BULLDOZED SITES. *In* Hardwood Sprout Development on Cleared Sites, pp. 7-8, illus. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 186.
Dense thickets in south Arkansas were bulldozed. First-year sprouts were few, and the tallest averaged 1.8 feet. After 3 years one-fourth of the area was overtopped by sprouts; after 7 years half was overtopped by sprouts averaging 6 feet tall.

* ———
1961. MORTALITY OF LOBLOLLY PINE PLANTED UNDER SMALL HARDWOODS. U. S. Forest Serv. Tree Planters' Notes 48, pp. 1-2, illus.
Proportions of the plots overtopped by hardwoods varied from 25 to 87 percent at planting time. After 2 years, pine mortality ranged from 20 to 64 percent, being heaviest on plots most completely overtopped.

——— and Clark, R. H.
1958. TRACTOR-MOUNTED SPRAY FOR CONTROLLING SMALL HARDWOODS. South. Lumberman 196(2445): 28, illus.
Pictorial description.

* Grelen, H. E.
1956. HOW ABOUT HELICOPTERS FOR SAND-HILL SCRUB OAK? South. Lumberman 193(2417): 247-248, illus.
The helicopter offers a fast, reasonably safe, and fairly inexpensive way to combat scrub oak in the Florida sandhills, provided that a chemical can be found that will prevent resprouting after the tops of the oaks have been killed.

———
1958. SITE PREPARATION ON FLORIDA SANDHILLS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 114.
Heavy machines prepare satisfactory planting sites for pine, but oaks and wiregrass should be eradicated with a minimum of soil displacement. A heavy double-drum brush chopper is suitable.

* ———
1959. MECHANICAL PREPARATION OF PINE PLANTING SITES IN FLORIDA SANDHILLS. Weeds 7: 184-188, illus.
A heavy, double-drum brush chopper eliminates scrub oak and wiregrass while leaving the topsoil and vegetative debris on the planting site.

* ———
1960. SEASONAL FOLIAGE APPLICATIONS OF 2,4,5-T ON SAW-PALMETTO. Thirteenth South. Weed Conf. Proc. 1960: 109-112, illus.
Tests in the sandhills of northwest Florida suggest that effectiveness of 2,4,5-T varies with season of application and that 3.5 pounds ahg in a 1-to-9 oil-water carrier is as good as higher concentrations.

* Halls, L. K.
1959. GALLBERRY (ILEX GLABRA [L.] GRAY). Handb.: Chemical Control of Range Weeds, pp. W-5, W-6. Range Seeding Equip. Com. U. S. Depts. Agr. and Int.
Chemicals and rates of application.

* ———
1959. SAW-PALMETTO (SERENOA REPENS [BARTR.] SMALL). Handb.: Chemical Control of Range Weeds, pp. W-39, W-40. Range Seeding Equip. Com. U. S. Depts. Agr. and Int.
Chemicals and rates of application.

Harrington, T. A.
1955. MORE POWER TO GIRDLING. Forest Farmer 14(8): 12, 16-17, illus.
In east Texas, a power tree girdler required 0.19 man-hour per 100 inches of tree diameter; hand girdling took 3 times as long.

* ———
1955. 2,4,5-T BASAL SPRAY ON HARDWOODS DOES NOT HARM LOBLOLLY PLANTED NEXT DAY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 95.
See next entry.

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1956. LOBLOLLY SEEDLING SURVIVAL AFTER HARDWOOD CONTROL BY 2,4,5-T. Jour Forestry 54: 39-40.
Loblolly pine seedlings can be planted promptly on areas where hardwoods have been controlled with low-volatile esters of 2,4,5-T.

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1958. RELEASE DOUBLES SHORTLEAF SEEDLING GROWTH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 113.
On the Cumberland Plateau of Tennessee, seedlings planted under hardwoods grew 3.4 inches in height the first year. Where the hardwoods were treated with 2,4,5-T, seedlings grew 8.3 inches.

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1959. 2,4,5-T EFFECTIVE FROM HELICOPTERS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 124. *Also in* Forestry Digest, p. 7. Feb. 1960.
On the Cumberland Plateau the oil solution of the iso-octyl ester reduced total crown coverage of low-grade hardwoods by 67 percent, two growing seasons after treatment. A water solution caused a 42-percent reduction.

* ———

1960. IMMEDIATE RELEASE PAYS OFF. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 127.
On the Cumberland Plateau, underplanted shortleaf pines, released from low-grade hardwoods prior to their first growing season, grew twice as fast the first year and four times as fast the second as did unreleased seedlings.

——— and KRING, J. S.

1960. TIME FOR THE TREE INJECTOR. South. Lumberman 200 (2491): 40, 42, illus.
Man-hours per acre for injecting chemicals into unwanted hardwoods of eastern Tennessee can be estimated by multiplying the sum of the diameters to be treated by 0.0023 and adding 0.49.

* HEBB, E. A.

1957. REGENERATION IN THE SANDHILLS. Jour. Forestry 55: 210-212, illus.
Eradication of competing oaks and wiregrass is the key to successful pine establishment in the deep sands of western Florida.

HOPKINS, WALT.

1956. GROWING PINE IN THE SANDHILLS. Forest Farmer 15(5): 4-6, illus.
The Chipola Experimental Forest has demonstrated that pines can be grown in the Florida sandhills if competition from oaks and wiregrass is reduced.

* HUCKENPAHLER, B. J.

1955. UNDERPLANTED LOBLOLLY PINE RESPONDS TO DELAYED RELEASE. Jour. Forestry 53: 512.
Even when delayed for as long as 8 years, release from overstory hardwoods greatly stimulated pine growth in north Mississippi.

* JOHNSON, R. L.

1959. FRILLS MUST BE COMPLETE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 119.
Even though a chemical is poured into the cut, a cull hardwood may survive if any cambium has been left unsevered.

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1961. HARDWOOD SPROUTS DOMINATE BOTTOM-LAND CLEARINGS. *In* Hardwood Sprout Development on Cleared Sites, p. 9, illus. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 186.
Five years after they had been bulldozed, openings were dominated by sprout trees, mainly bitter pecan and green ash.

KRINARD, R. M.

1960. DEADENING VINES FAILS TO IMPROVE COTTONWOOD GROWTH. Miss. Farm Res. 23(5): 3, 5.
Trees whose crowns were freed of vines grew no faster than untreated trees, which averaged 45 vines apiece, some of them 3 inches in diameter.

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1960. TREE INJECTOR WORKS ON BOTTOM-LAND HARDWOODS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 130.
It was tested on bitter pecan and overcup oak in the Mississippi Delta.

* LAWSON, E. R.

1959. 2,4,5-T BETTER IN DIESEL OIL. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 119.
In the Ouachita Mountains, 2,4,5-T in diesel oil, applied with a tree injector, killed the crowns of 98 percent of treated white oaks in a year. The same concentration in a water carrier gave a 65-percent kill.

* MCCLURKIN, D. C.

1958. MALEIC HYDRAZIDE FAILS TO CONTROL FERTILIZED BERMUDAGRASS. U. S Forest Serv. Tree Planters' Notes 33, p. 29.
Loblolly pines were planted on an eroded site in north Mississippi and heavily fertilized. Maleic hydrazide, applied in May, did not retard the Bermudagrass, which by the end of the season had killed many pine seedlings.

MCKNIGHT, J. S., and MCWILLIAMS, J. S.

1957. IMPROVING SOUTHERN HARDWOOD STANDS THROUGH COMMERCIAL HARVEST AND CULL-TREE CONTROL. Soc. Amer. Foresters Proc. 1956: 71-72.
Perhaps one-fifth of the growing space of productive hardwood sites is occupied by culls. Most of the methods of cull-tree control being used in other timber types and regions also work well in the southern hardwoods, but all trees to be removed should be marked by a forester familiar with hardwood quality and utilization.

* MAISENHELDER, L. C.

1958. UNDERSTORY PLANTS OF BOTTOMLAND FORESTS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 165, 40 pp., illus.
Pictorial descriptions, plus a brief text, to aid recognition of 36 understory plants in river-bottom forests of the Midsouth.

* MAPLE, W. R.

1960. ROTARY CUTTER PREPARES PINE SEEDBED FOR NATURAL REGENERATION WHILE CLEARING BRUSH. U. S. Forest Serv. Tree Planters' Notes 40, pp. 17-19, illus.
In the Arkansas Ozarks, site treatment with the brush cutters resulted in a better seedling catch, following the bumper 1957 shortleaf pine cone crop, than was obtained with prescribed burning or chemical control of small hardwoods.

MIGNERY, A. L.

1956. BASAL SPRAY CONTROLS IRONWOOD AND HAWTHORN. Tex. Forest News 35(4): 10.
The spray was 2,4,5-T in diesel oil, applied in December.

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1956. WHAT GIVES WITH GIRDLING? South. Lumberman 193 (2417): 214-215, illus.
Experience of east Texas landowners indicates that trees girdled by machine die more slowly than those treated with chemicals, but that the amount of growing space opened up is practically the same. Machine-made girdles bridged over somewhat more frequently than ax-and-poison treatments.

PEEVY, F. A.

1956. METHODS FOR CONTROLLING HARDWOODS. Forests and People 6(3): 22-25, 34-35, illus.
Chemicals, dosages, season and methods of application, and costs.

* Peevy, F. A.
1959. FOLIAR APPLICATION. Forests and People 9(2): 20-21, 46, illus.
For controlling cull hardwoods from the air, 2 pounds acid equivalent of a low-volatile ester of 2,4,5-T in an oil-water emulsion (3.5 gallons of water and 1.5 gallons of oil and herbicide) is effective and economical. For application from the ground, 2 to 4 pounds acid equivalent of the low-volatile 2,4,5-T ester per 100 gallons of carrier (98 gallons of water and 2 gallons of oil and herbicide) gives good results; rate of application may vary from 30 to 200 gallons of mixture per acre, depending on density and height of brush.

* ———
1959. METHODS OF APPLYING HERBICIDES FOR CONTROLLING INDIVIDUAL WEED TREES. Forests and People 9(3): 31, 42-43, illus.
Unwanted hardwoods can be killed by injecting 2,4,5-T into the trunk, or by injecting fenuron into the soil at the base of the tree. In central Louisiana, costs of chemical and labor per inch of trunk diameter were one-fourth to one-third cent for tree injections and one-half cent for soil injections.

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1960. A COMPARISON OF DIFFERENT PLACEMENTS OF 2,4,5-T ESTER APPLIED AS A BASAL SPRAY FOR CONTROL OF BLACKJACK OAK. South. Weed Conf. Proc. 13: 200-204.
Best kill appears to result from application to the rootcollar and sprouting zone at the base of trees.

* ———
1960. CONTROLLING SOUTHERN WEED TREES WITH HERBICIDES. Jour. Forestry 58: 708-710, illus.
Costs and methods of using silvicides in frills or notches, as basal sprays, with tree injectors, as foliar sprays from the ground or air, and as soil applications.

* ———
1960. SOIL APPLICATION OF CHEMICALS FOR CONTROL OF SOUTHERN UPLAND HARDWOODS. Forests and People 10(1): 24-25, 37, illus.
Fenuron and monuron killed oaks when applied in late winter or spring at rates of 0.5 to 1.0 gram of active material per inch of trunk diameter. Fenuron was the most effective, and its residue seemed less damaging to pines.

* ———
1961. BASAL APPLICATION OF HERBICIDES FOR CONTROL OF WOODY PLANTS. *In* The Use of Chemicals in Southern Forests. La. State Univ. Ninth Ann. Forestry Symposium Proc. 1960: 66-70.
Chemicals and methods of application in frills or notches, as basal stem sprays, with tree injectors, and to the soil.

* ———
1961. CONTROL OF BLACKJACK OAK BY BASAL SPRAYING WITH 2,4,5-T. Weeds 9: 50-53, illus.
Best treatment was 8 pounds of 2,4,5-T per 100 gallons of oil, applied in a band 8 inches wide at rate of 64 milliliters of solution per inch of trunk diameter.

* ———
1961. KILLING WOODY PLANTS WITH HERBICIDES. South. Weed Conf. Proc. 14: 208-217.
Chemicals and dosages for foliar spraying from ground or air, trunk injections, soil treatment, stem spray, and applications on stumps and in frills or notches.

* ———
1961. TESTING THE NEW HERBICIDES. Forests and People 11(2): 20-21, 36-37, illus.
Of 9 new herbicides, none was better than 2,4,5-T for general use, though some proved equally good for specific purposes.

——— and Burns, P. Y.
1959. EFFECTIVENESS OF AERIAL APPLICATION OF HERBICIDES FOR HARDWOOD CONTROL IN LOUISIANA. Weeds 7: 463-469, illus.
Of 7 herbicidal treatments, the most effective was the butoxyethanol ester of 2,4,5-T in oil-water emulsion. The propylene glycol butyl ether ester of silvex in oil-water emulsion was as effective as the 2,4,5-T ester on hickory and on blackjack, red, and post oak, but less effective on sweetgum, blackgum, and white and black oak.

* Reynolds, R. R.
1956. UPLAND HARDWOODS IN SOUTH ARKANSAS PINE STANDS—AERIAL OR UNDERGROUND FIFTH COLUMN? Jour. Forestry 54: 585-586, illus.
Sprouting from old rootstocks, and not new seeding from distant untreated areas, seems to account for nearly all the hardwood brush that often comes in under pine stands in which the seed-bearing hardwoods have been killed.

* Russell, T. E.
1961. COMPLETE RELEASE BEST ON CUMBERLAND PLATEAU. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 133.
Three years after they were underplanted, loblolly pines were tallest where both understory and overstory competition had been eliminated—and taller where silvicide had been used than where hardwoods had simply been cut or girdled.

* ———
1961. CONTROL OF UNDERSTORY HARDWOODS FAILS TO SPEED GROWTH OF POLE-SIZE LOBLOLLY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 131.
During 6 years, growth averaged 172 cubic feet per acre annually in untreated stands and 175 cubic feet where all hardwoods had been removed. The plantation, in central Louisiana, was 26 years old when the study began.

* ———
1961. 'COPTER CONTROL FOR CUMBERLAND CULLS. South. Lumberman 203(2537): 169-170, illus.
In a 600-acre test in southeastern Tennessee, helicopter application of 2,4,5-T in diesel oil eliminated enough overstory hardwoods to insure survival and early growth of planted pines. A water solution was less effective.

* ——— and Rhame, T. E.
1960. DISK BEFORE SEEDING SLASH PINE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 130.
See next entry.

* ——— and Rhame, T. E.
1961. THE ADVANTAGES OF DISKING FOR SLASH SEEDING. Forests and People 11(1): 12-13, illus.
In central Louisiana, cost of disking a seedbed was offset by increased growth and survival of direct-seeded slash pines.

* Scheer, R. L.
1958. INTENSIVE SITE PREPARATION STIMULATES LONGLEAF GROWTH ON SANDHILLS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 115.
Complete removal of competing wiregrass and scrub oaks considerably speeded height growth of planted longleaf pine.

* ———— and Woods, F. W.
1959. INTENSITY OF PREPLANTING SITE PREPARATION REQUIRED FOR FLORIDA'S SANDHILLS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 168, 12 pp., illus.
Complete removal of competing scrub oaks and wiregrass was found necessary for consistently satisfactory survival of planted slash pine. Bulldozing accomplishes this degree of site preparation, but methods that leave topsoil in place are preferable.

Shoulders, Eugene.
1955. CONSERVING LOUISIANA'S LOBLOLLY PINE. Forests and People 5(4): 36-37, 45, illus.
Prompt release benefits underplanted pines.

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1955. PUTTING OZARK FORESTS TO WORK. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 98.
Many depleted Ozark woodlands could be put back to work quickly if their owners would sell undesirable growing stock and use part of the returns to deaden culls.

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1955. RELEASE UNDERPLANTED LOBLOLLY EARLY. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 100.
In Louisiana, pines released immediately after they were planted beneath overstory hardwoods grew and survived better than those released 1 or 2 years later.

———
1956. TIMBER STAND IMPROVEMENT IN OZARK FORESTS—AN APPRAISAL AFTER 15 YEARS. Jour. Forestry 54: 824-827, illus.
Benefits are most noticeable in the understory, where basal area and stem quality have improved in proportion to the amount of overstory removed. Cleaning around understory crop trees also stimulated growth, but only when done in conjunction with overhead release.

———
1957. SCALPING BOOSTS PLANTING SURVIVAL. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 110.
See next entry.

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1957. SITE PREPARATION—DOES IT PAY? Forests and People 7(3): 20-21, 23, illus.
In central Louisiana, more pine seedlings survived the first year on prepared than on unprepared sites. Site preparations tested were scalping, triple-disking in strips, and shallow and deep furrowing with a Mathis plow. Scalping appeared to be the most effective practical treatment, as it was done with standard attachments to the Lowther tree planter.

———
1958. SCALPING—A PRACTICAL METHOD OF INCREASING PLANTATION SURVIVAL. Forest Farmer 17(10): 10-11, illus.
See preceding entry.

Siegel, W. C.
1960. DELAY IN RELEASE STUNTS LOBLOLLY GROWTH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 128.
In central Mississippi, 13-year-old natural loblolly pines that had been released at age 3 years were twice as tall as those freed at age 8, but less than half the height of trees that had been planted in the open.

* Smalley, G. W.
1958. STAND IMPROVEMENT PAYS OFF. South. Lumberman 197 (2465): 100-102, illus.
In a pine-hardwood stand near Birmingham, Alabama, pine growth was best on plots given the most intensive treatment. This treatment consisted of selling all merchantable hardwoods, felling or girdling all unmerchantable hardwoods 2 inches or more in d.b.h., and cutting hardwoods less than 2 inches in diameter if they were overtopping pines.

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1959. GIRDLE OR FELL OAKS TO RELEASE PINES? U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 122.
Methods of release made no difference in soil moisture, nor in the survival or growth of underplanted loblolly seedlings.

Smith, J. L.
1959. BENZOIC ACID INEFFECTIVE ON HARDWOODS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 122.
The chemical was applied to the soil surface both broadcast and around individual white oak root-collars. It had little effect on the oaks, but broadcast application killed practically all shortleaf pines up to 12 inches d.b.h.

* ———
1959. TESTS OF INJECTED CHEMICALS FOR HARDWOOD CONTROL IN THE ARKANSAS MOUNTAINS. Twelfth South. Weed Conf. Proc. 1959: 123-125.
Three formulations were effective. They were the 44-pound ahg concentrations of butoxy ethanol esters of mixed 2,4-D and 2,4,5-T; of butoxy ethanol ester of 2,4,5-T; and of the 2-ethyl-hexyl ester of 2,4,5-T.

* ———
1959. 2,4,5-T CONCENTRATIONS FOR TREE INJECTION IN THE ARKANSAS OUACHITAS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 123.
Heavy concentrations were required to give adequate first-year kill of cull white oaks.

* ———
1960. HARDWOOD REMOVAL LESSENS LITTER-HUMUS IN OZARKS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 9-10.
Weight of the litter-humus layer declined by half within a year after hardwoods were killed with 2,4,5-T sprays. Corresponding reductions were noted in retention storage of moisture, and greater ones in detention storage.

* ———
1960. MIST BLOWER FOR CONTROLLING UNDESIRABLE HARDWOODS. South. Lumberman 201(2513): 185-186, illus.
Tests near Hot Springs, Arkansas, indicated that mist blowers will do a good job where small hardwoods are too numerous for single-stem treatment or too well protected by the overstory for airplane spraying.

* ————Bower, D. R., and Lawson, E. R.
1960. SITE PREPARATION AIDS PINE SEEDING IN OUACHITAS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 129.
Baring mineral soil by burning or furrowing consistently improved stocking and survival of direct-seeded shortleaf pine. Mere deadening of hardwoods was inadequate.

* ———— and Lawson, E. R.
1960. HERBICIDAL SPRAYS DAMAGE PINE SEEDLINGS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.
In the Ouachita Mountains, foliage spraying with 2,4,5-T to control understory hardwoods was lethal to newly germinated shortleaf seedlings.

* Smith, J. L., and Lawson, E. R.
1960. late sprays kill hardwoods in wet year. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.
In the Ouachitas, foliage sprays of 2,4,5-T controlled undesirable hardwoods as effectively in the late growing season as in spring, provided that soil moisture remained adequate for tree growth.

* Stephenson, G. K., and Gibbs, C. B.
1959. selective control of cull hardwoods in east texas. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 175, 10 pp., illus.
Techniques for deadening individual trees—as distinguished from broadcast methods of cull-tree control. Mechanical girdling has been found cheaper than ax work, but both kinds of girdles need chemical supplements to prevent sprouting. Esters of 2,4,5-T are effective as supplements to girdling, or as basal sprays or injections.

* Stransky, J. J.
1959. concentrated or diluted 2,4,5-T as a supplement to girdling? Jour. Forestry 57: 432-434, illus.
Concentrated and diluted 2,4,5-T were equally effective in killing crowns of post oak and sweetgum in east Texas, but the concentrate was a poor sprout inhibitor and the dilute solution a very good one. Growing-season treatments were better than dormant-season applications. Ax girdles were more effective than machine girdles when no chemical was applied, but with chemicals the differences were insignificant.

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1959. site treatments have little effect during wet season in texas. U. S. Forest Serv. Tree Planters' Notes 36, pp. 20-21.
Though no treatment significantly improved either survival or height growth in a wet spring, flat-breaking seemed to offer possibilities for a dry year. Burning greatly reduced the cost of mechanical site preparation in bushy old fields.

* ———
1961. weed control, soil moisture, and loblolly pine seedling behavior. Jour. Forestry 59: 282-284, 289-290, illus.
In a critical drought, plots on which weeds and grasses were best controlled had most soil moisture and best pine survival. The study was in east Texas; droughts are frequent here and the investigation indicated the advisability of preparing sites before planting pines.

Williston, H. L.
1956. what happens when you free suppressed pines. Forest Farmer 15(9): 12, illus.
Even pines that seem hopelessly suppressed will usually recover if low-grade hardwoods are deadened.

* ———
1959. ten-year results of releasing loblolly pine. Miss. Farm Res. 22(10): 3-4, illus.
The pines were underplanted in 1941 on a blackjack-post oak ridge in Mississippi and released after 8 growing seasons. While earlier control of the overstory would have been preferable, diameter growth in 1948-1958 was 2½ times as great as for unreleased pines, and height growth 1 to 1½ times as great.

* ———
1960. killing hardwoods with 2,4,5-T. Miss. Farm Res. 23(10): 2.
Frilling or machine-girdling hardwoods without use of 2,4,5-T will release pine seedlings that are vigorous and at least 3 feet tall. Where the pines are smaller, 2,4,5-T should be used in a frill or girdle. Frills seem to kill hardwood crowns faster than machine girdles do.

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1961. intensive early release promotes growth of pines. Miss. Farm Res. 24(10): 5.
Immediate and complete removal of competing hardwoods increased soil moisture and improved survival and growth of underplanted pines. Delayed or partial release was less effective.

* ——— and Huckenpahler, B. J.
1958. response of six conifers in north mississippi underplantings. Jour. Forestry 56: 135-137, illus.
Immediate release from hardwood competition greatly stimulates the height growth of seedlings. Loblolly pine has outgrown other conifers and appears to be the best of the species tested for restocking hardwood stands on dry loessial ridges. On a soil with rapid internal drainage, shortleaf and Virginia pine survived better than loblolly during drought years. Eastern redcedar survived well but has been severely browsed by deer. Slash pine and longleaf did not perform well.

* ——— and McClurkin, D. C.
1961. soil moisture-seedling growth relations in conversion planting of oak ridges to pine. Jour. Forestry 59: 20-23, illus.
On a loessial ridge in north Mississippi, more soil moisture was available to loblolly pines where all hardwoods had been treated than where only the overstory or only the understory stems had been removed. Overstory hardwoods appeared to draw more moisture from upper soil zones than did understory hardwoods, but both classes drew equally from lower depths.

Woods, F. W.
1955. control of woody weeds: some physiological aspects. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 143, 50 pp.
A review of present knowledge, with emphasis on changes in carbohydrate metabolism.

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1955. tests of a soil sterilant for forestry use. Sci. 122: 332.
See next entry.

* ———
1955. tests of cmu for forestry. Forest Sci. 1: 240-243, illus.
In the sandhills of western Florida, CMU killed scrub oaks when applied to the soil in dosages of 11 pounds per acre. Much higher dosages were needed to eliminate wiregrass and other ground cover. Slash pine seedlings planted 9 months after application were damaged or destroyed on all plots where the dosage had been 4 pounds or more per acre.

———
1955. tests of two soil sterilants for forestry use. Eighth South. Weed Conf. Proc. 1955: 249-254, illus.
At dosages of 120 pounds per acre, TCA killed 83 percent of the trees and nearly all of the lesser vegetation on Florida sandhills. It reached maximum effectiveness in 60 days after application, and did not interfere with slash pines planted 9 months after application. For performance of CMU, see abstract immediately above.

* ————

1956. RELATION OF SOIL MOISTURE AND TEMPERATURE TO WEED CONTROL. Ninth South. Weed Conf. Proc. 1956: 161-165, illus.

On sandhill sites in west Florida, complete eradication of oak and wiregrass improved the survival of planted slash pine by decreasing the competition for soil moisture.

* ————

1956. SITE PREPARATION HELPS PLANTED PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 103. *Also in* The Unit, News Letter 66, p. 31.

See preceding entry.

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1958. SOME EFFECTS OF SITE PREPARATION ON SOIL MOISTURE IN SANDHILLS OF WEST FLORIDA. Soil Sci. 85: 148-155, illus.

Soil moisture in the 3- to 9-inch layer was closely and positively related to pine seedling survival.

* ————

1959. CONVERTING SCRUB OAK SANDHILLS TO PINE FORESTS IN FLORIDA. Jour. Forestry 57: 117-119, illus.

For best survival and growth of pine plantations on the Florida sandhills, sites should be completely cleared of oaks and wiregrass. Two treatments with a double-drum brush chopper are recommended—the first in late April or early May, the second not less than 6 weeks later.

* ———— and CASSADY, J. T.

1961. SPROUTING OF SANDHILLS SCRUB OAKS FOLLOWING CUTTING. *In* Hardwood Sprout Development on Cleared Sites, pp. 1-6, illus. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 186.

Turkey and bluejack oaks in the sandhills of western Florida were cut 4 inches above the ground in May, and sprouts were removed twice thereafter during the same growing season. Removals at 6 or 8 weeks apart were better than those at 4-week intervals.

————CASSADY, J. T., and ROSSOLL, HARRY.

1958. HOW TO PREPARE GULFCOAST SANDHILLS FOR PLANTING PINES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 161, 11 pp., illus.

Pictorial description.

* ———— HARRIS, H. C., and CALDWELL, R. E.

1959. MONTHLY VARIATIONS OF CARBOHYDRATES AND NITROGEN IN ROOTS OF SANDHILL OAKS AND WIREGRASS. Ecol. 40: 292-295, illus.

Oaks (Quercus laevis, Q. incana) *reached their lowest natural ebb of carbohydrates in late April or early May; total nitrogen in oak roots was lowest in the first week of June. In wiregrass* (Aristida stricta) *carbohydrates were at low point in mid-July and nitrogen in September.*

YOCOM, H. A.

1955. MACHINE FASTER THAN AX IN GIRDLING. Jour. Forestry 53: 205-206.

A gasoline-powered machine was found twice as fast as an ax for girdling unwanted hardwoods in north-central Alabama; a formula was developed to predict the time required for machine girdling.

————

1958. DEEP GIRDLES GIVE QUICKEST CROWN KILL OF OAKS. Jour. Forestry 56: 217, illus.

In north Alabama, completely severing the sapwood kills the crowns of upland oaks much quicker than do shallower girdles.

* ————

1958. MACHINE GIRDLING COMPARED TO AX. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 115.

Oaks girdled by machine took somewhat longer to die than those that were double-hacked or frilled.

————

1959. HARDWOOD CONTROL METHODS. Ala. Forest Prod. 2: 124-126, illus.

Brief review.

FIRE

* BRUCE, DAVID.

1955. LONGLEAF LED THE WAY. La. State Univ. Fourth Ann. Forestry Symposium Proc. 1955: 79-83.

Longleaf pine was the first U. S. forest type in which fire was used silviculturally. The species' natural fire resistance, and the fuels and soils characteristic of longleaf sites, make successful prescribed burning easier than in the loblolly-shortleaf type.

* ————

1956. YOUNG LONGLEAF DO BEST ON FRESH BURNS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 101.

Age of rough influences early growth and survival.

* ———— and NELSON, R. M.

1957. USE AND EFFECTS OF FIRE IN SOUTHERN FORESTS: ABSTRACTS OF PUBLICATIONS BY THE SOUTHERN AND SOUTHEASTERN FOREST EXPERIMENT STATIONS, 1921-55. U. S. Forest Serv. Fire Control Notes 18(2): 67-96.

FAHNESTOCK, G. R.

1958. BORATE FIRELINES TOXIC TO SOUTHERN VEGETATION. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 118.

See second entry below.

* ————

1959. WHEN WILL THE BOTTOM-LANDS BURN? Forests and People 9(3): 18-19, 44-45, illus.

In the Louisiana Delta, during the period August 1 and March 31, number of days with fires, fires per day, and area burned all increase sharply when rainfall for the preceding 60 days dips below 8 inches. The fire situation continues to worsen as 60-day rainfall declines further.

* ———— and JOHANSEN, R. W.

1960. WILL BORATE KILL SOUTHERN TIMBER? U. S. Forest Serv. Fire Control Notes 21(3): 87-93, illus.

Both in Georgia and Louisiana, sodium calcium borate is toxic to pines when used at the rates required for fireline construction.

FERGUSON, E. R.

1955. FIRE-SCORCHED TREES—WILL THEY LIVE OR DIE? La. State Univ. Fourth Ann. Forestry Symposium Proc. 1955: 102-111, illus.

Interim results from an east Texas study suggest that salvage after a fire should be concentrated first on pines that have had all their foliage consumed, then on those that have suffered complete crown scorch and very severe or very extensive bark scorch. Trees damaged in summer fires are more likely to succumb than those damaged at other seasons. Shortleaf pines are poorer risks than loblolly or longleaf.

Ferguson, E. R.
1957. prescribed burning in shortleaf-loblolly pine on rolling uplands in east texas. U. S. Forest Serv. Fire Control Notes 18(3): 130-132, illus.
Large test burns on rolling uplands in east Texas have proved variable and only moderately effective in controlling undesirable hardwood understory. This is in contrast to encouraging results on small plots.

* ———
1957. stem-kill and sprouting following prescribed fires in a pine-hardwood stand in texas. Jour. Forestry 55: 426-429, illus.
Hardwoods under 1.5 inches in diameter were controlled much more readily than larger ones. More tops were killed by headfires than by backfires, and fires during the growing season were more effective than those at other times. Fires that caused high mortality and damage in hardwoods also killed the most small pines.

———
1958. age of rough (ground cover) affects shortleaf pine establishment and survival. Jour. Forestry 56: 422-423, illus.
Prescribed burns were made at four times of the year and at intervals of 3 to 43 months prior to the heavy shortleaf pine seed crop of 1955. After a dry winter, germination averaged 3.7 percent, but was substantially less where burns had been made 2 or 3 years prior to seedfall. First-year survival was better on growing-season burns than on dormant-season burns.

* ———
1958. prescribed burning as an aid in regenerating difficult areas. Gulf States Sect. Soc. Amer. Foresters Proc. 1958: 35-41.
Prescribed fires can be used to improve seedbeds and to control unwanted hardwoods on areas that could not be regenerated to pine without such preparation. Other methods may give better results than fire but will generally be more costly.

* ———
1961. effects of prescribed fires on understory stems in pine-hardwood stands of texas. Jour. Forestry 59: 356-359, illus.
Proportionately more hardwood than pine stems were killed back, but most damaged pines died and 90 percent of the hardwoods resprouted. Sweetgum was more susceptible than oak, fires in the growing season killed more hardwoods than did winter burns, and 1- and 2-inch stems of all species were more readily killed than larger ones.

——— Gibbs, C. B., and Thatcher, R. C.
1960. "cool" burns and pine mortality. U. S. Forest Serv. Fire Control Notes 21(1): 27-29, illus.
Assessments of fire damage, for salvage or other purposes, should not be limited to scorched crowns and trunks, but should also include low basal scorch, particularly following slow, low-burning ground fires in areas with heavy litter accumulations.

* Gwinner, M. W., and Fahnestock, G. R.
1961. borate effects after three years. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 133.
Pines and other forest vegetation are recovering from an experimental spraying with a fire-retardant slurry of sodium calcium borate. Where dosages were heavier than would be required for operational firelines, considerable ground is still bare. See Fahnestock and Johansen, above.

* Hare, R. C.
1960. detecting dead cambium with a moisture meter. Jour. Forestry 58: 815-817, illus.
Cambium loses electrical conductivity soon after it dies. A lumber moisture meter, with probes insulated except at the very tips, can therefore be used for rapid and non-injurious separation of living and dead trees in recently burned stands. The meter can also measure bark thickness.

* ———
1961. heat effects on living plants. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 183, 32 pp.
Literature review, with recommendations for research into physiological effects of high temperature on woody plants.

Harrington, T. A., and Stephenson, G. K.
1955. repeat burns reduce small stems in texas big thicket. Jour. Forestry 53: 847.
Prescribed spring burns repeated at short intervals reduced understory hardwoods.

Jorgensen, Jacques, and Derr, H. J.
1958. yearling longleaf survives a wildfire. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 114.
If weather is favorable during the first year, longleaf seedlings may reach a size that enables them to survive some accidental fires.

* Mann, W. F., Jr., and Gunter, E. R.
1960. predicting the fate of fire-damaged pines. Forests and People 10(1): 26-27, 43, illus. *Also in* Forest World, pp. 5-7. June 1962.
Proportion of live crown with needle scorch and, secondly, the extent of cambium kill at groundline appeared to be better indicators of mortality than height of bark charring, length of live crown with needles consumed, presence of bark beetles, or pitch bleeding. No differences were noted between loblolly, shortleaf, and slash pine.

* ——— and Gunter, E. R.
1960. the odds for a fire-damaged pine to die. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 126.
See preceding entry.

* ——— and Rhame, T. E.
1955. prescribe-burning planted slash pine. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 96.
Slash pine plantations under 8 feet tall can be burned when conditions are optimum and personnel are experienced, but it is risky business.

——— and Whitaker, L. B.
1955. effects of prescribe-burning 4-year-old planted slash pine. U. S. Forest Serv. Fire Control Notes 16(3): 3-5.
A 600-acre plantation in central Louisiana was burned in late winter, primarily to reduce an old rough that had become a fire hazard. Mortality from the fire was 8 percent, mostly in trees so small that they were unlikely to reach merchantable size. In the first year after the fire, survivors with more than half of their needles scorched made somewhat less height growth than unburned seedlings.

* Nelson, R. M., and Bruce, David.
1958. forest fire research needs in the south. Jour. Forestry 56: 399-403.
Subjects for research are ignition and combustion processes, fuel characteristics, weather and fire behavior, fire danger measurement, human relations affecting fire prevention, suppression techniques, direct and indirect fire effects, and techniques of fire use.

* Smith, J. L., and Bower, D. R.
1961. burning destroys duff-stored seed. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 131.
Shortleaf pine seed in the Ouachita Mountains of Arkansas sometimes lies in the duff for a year before it germinates. Untimely controlled burning for seedbed preparation can destroy such seed and thus reduce the crop of natural seedlings.

Thomas, A. A.
1956. the christmas eve burn. Amer. Forests 62(3): 28-29, 60, illus. *Also in* U. S. Forest Serv. Fire Control Notes 17(4): 9-12, illus.
A prescribed burn saved $2,000 worth of longleaf seedlings in south Alabama. Cost of the burn was less than $100, and damage to the seedling stand not more than $50.

* Toole, E. R., and McKnight, J. S.
1955. fire and the hapless hardwood. South. Lumberman 191(2393): 181-182, illus.
A bottom-land hardwood tract that had suffered a wildfire suffered complete mortality in the seedling component and tremendous damage to larger trees. The article suggests guides for salvaging fire-damaged timber and for estimating the extent of the rot behind old wounds.

———— and McKnight, J. S.
1955. fire damage to hardwood trees shown in delta. Miss. Farm Res. 18(9): 1, 8, illus. *Also as* Miss. Agr. Expt. Sta. Serv. Sheet 432, 2 pp., illus.
See preceding entry.

* ———— and McKnight, J. S.
1956. fire effects in southern hardwoods. U. S. Forest Serv. Fire Control Notes 17(3): 1-4, illus.
See second entry above.

———— and McKnight, J. S.
[1957.] fire prevention a must in growing hardwood. Miss. Forestry Assoc., 2 pp., illus.
See third entry above.

REGENERATION

* Allen, R. M.
1955. foliage treatments improve survival of longleaf pine plantings. Jour. Forestry 53: 724-727, illus.
Partially clipping the needles of longleaf pine planting stock can reduce transpiration and improve field survival. Wax foliage coatings have sometimes improved and sometimes reduced survival.

————
1955. growth of planted longleaf pine on cutover land and old fields. Jour. Forestry 53: 587, illus.
In south Mississippi, satisfactory longleaf pine stands were obtained in 10 years by planting 1,500 to 2,000 seedlings per acre on old fields. On cutover land, where competition from grass and brush was more intense, similar plantings yielded inadequate stands.

————
1956. relation of saw-palmetto to longleaf pine reproduction on a dry site. Ecol. 37: 195-196, illus.
Pine seedlings were found only near clumps of saw-palmetto. Apparently the palmetto shade protected the seedlings from lethal temperatures and improved their water relations.

* ———— and McComb, A. L.
1956. rooting of cottonwood cuttings. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 151, 10 pp., illus. *Also as* über faktoren, die die bewurzelung der stecklinge von der populus deltoides bartr. beeinflussen. Zentbl. f. das Gesam. Forstw. 74(4): 199-220, illus. 1955.
Rooting ability decreased as age of the cutting wood increased from 1 to 4 years. Indoleacetic acid or indole-n-butyric acid stimulated rooting but retarded top growth. The higher the moisture level of the soil, the better was the survival and rooting.

———— and Maki, T. E.
1955. response of longleaf pine seedlings to soils and fertilizers. Soil Sci. 79: 359-362.
Even though they may be of the same green weight, seedlings grown in different soils can differ in ability to survive after being transplanted.

* ———— and Scarbrough, N. M.
1960. growth of slash pine and pond pine on wet sites. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.
Seven years after being planted on wet sites in southern Mississippi, Pinus elliottii *averaged 7.2 feet tall, as compared to 2.0 feet for* P. serotina.

* Barnett, J. P., and McLemore, B. F.
1961. tree age unimportant in longleaf seed viability. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 135.
Seed from trees averaging 21, 40, and 85 years old did not differ in viability, either immediately or after 5 years of storage at 35° F.

* Beaufait, W. R.
1957. coppice regeneration of sweetgum. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 107.
A year after pulpwood-size sweetgums were cut flush with the ground, sprouts had adequately restocked the area.

* ————
1957. simple tool for planting acorns. U. S. Forest Serv. Tree Planters' Notes 28, p. 5, illus.
A rod with a footplate to assure planting holes of uniform depth.

* Bilan, M. V.
1960. root development of loblolly pine seedlings in modified environments. Stephen F. Austin State Col. Forestry Dept. Bul. 4, 31 pp., illus.
Where the soil surface was shielded by mulch, shade, or sod, more than half the growth of roots was in the uppermost 3-inch layer, and more than 70 percent of root weight was in the top 6-inch layer. Scalping the site before seedlings were planted increased the total dry weight of roots and shoots greatly, increased temperature of the soil surface, and caused root systems to shift downward.

* Blair, R. M., and Langlinais, M. J.
1960. nutria and swamp rabbits damage baldcypress plantings. Jour. Forestry 58: 388-389, illus.
In some parts of Louisiana, depredations have been so severe that planting has been suspended.

* Bower, D. R., and Smith, J. L.
1961. PARTIAL GIRDLING MULTIPLIES SHORTLEAF CONES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132.
Cone production increased the third year after trees were partially girdled.

* ———— and Smith, J. L.
1961. PLANTING VS. SEEDING IN OUACHITAS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 131.
On unburned areas, planting resulted in more and better-distributed shortleaf pines per acre than did direct seeding. On burned plots, seeding yielded more trees.

Boyer, W. D.
1956. LAMBERT SEEDS LONGLEAF PINE. Ala. Lumberman 8(7): 12, 14, 16, illus.
Mr. Brooks Lambert, of the T. R. Miller Mill Company, direct-seeded a dry sandy ridge in southern Alabama after clearing off oaks and wiregrass with heavy machinery. The seed was coated with anthraquinone to repel birds.

* ————
1956. TIME OF LONGLEAF SEEDFALL. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 102.
In southern Alabama during 1955, an above-average longleaf seed crop totaled more than 100,000 viable seeds per acre, half of which fell between October 24 and November 7.

* ————
1958. LONGLEAF PINE SEED DISPERSAL IN SOUTH ALABAMA. Jour. Forestry 56: 265-268, illus.
The zone of seedfall generally accepted as adequate for natural regeneration (15,000 sound seeds per acre) extended only 1½ chains into clearcut openings even where more than 200,000 seeds per acre fell on the ground inside the stand bordering the clearcutting.

* Broadfoot, W. M.
1960. COTTONWOOD GROWTH VARIES WITH TYPE OF SOIL. Miss. Farm Res. 23(10): 7, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 677, 2 pp., illus.
Trees on Robinsonville silt loam were 43 feet tall after 5 years in the field.

* Bruce, David.
1956. EFFECT OF DEFOLIATION ON GROWTH OF LONGLEAF PINE SEEDLINGS. Forest Sci. 2: 31-35, illus.
Seedlings were 30-, 60-, and 90-percent defoliated with shears in July, November, or February. Growth loss was about in proportion to the amount of foliage removed. Clipping in November reduced growth significantly more than July treatment, while defoliation in February was the least damaging.

* ————
1959. EFFECT OF LOW COMPETITION ON LONGLEAF PINE SEEDLING GROWTH. Soc. Amer. Foresters Proc. 1958: 151-153, illus.
Guides for deciding when reduction of competition is necessary to get longleaf to start height growth.

* Burns, R. M.
1959. DIRECT SEEDING OF PINES SHOWS PROMISE IN TEST. Miss. Farm Res. 22(10): 6, illus.
The seed was loblolly, treated with endrin and thiram. Unburned plots had a better seed catch but greater first-year mortality than burned plots.

* ————
1960. COPPER CARBONATE—BOON OR BANE? U. S. Forest Serv. Tree Planters' Notes 40, pp. 5-6.
This rabbit repellent should be applied to pine seedlings on the planting site, either by top-dipping or spraying. If used in the nursery, it is likely to damage seedlings when they are in bales.

* ————
1960. REPELLENTS REDUCE RABBIT DAMAGE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 129.
See Burns, 1961, RABBIT REPELLENTS IN NORTH MISSISSIPPI.

* ————
1960. RESPONSE OF SELECTED CONIFEROUS SEEDS TO GIBBERELLIC ACID. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 13-16, illus.
At concentrations of about 100 milligrams per liter, gibberellic acid improved germination and height growth of loblolly pine. Germination of longleaf pine was not significantly affected, but the response of 150, 225, and 300 mg./liter was progressively greater. Effects on seeds of eastern redcedar were indeterminate.

* ————
1961. COLD-STORED HARDWOODS SURVIVE DELAYED PLANTING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 131.
Seedlings of sweetgum and four species of red oak survived well after 3 months of cold storage in shipping bales.

* ————
1961. NO ADVANTAGE IN PLANTING HARDWOODS DEEP OR WITH MATTOCK. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 134.
On lowlands in north Mississippi, planting red oaks and sweetgum deep or with a mattock afforded no advantage over bar planting at rootcollar depth.

* ————
1961. RABBIT REPELLENTS IN NORTH MISSISSIPPI. U. S. Forest Serv. Tree Planters' Notes 45, pp. 19-22.
Repellents containing endrin, zinc dithiocarbamate, nicotine sulfate, and calcium polysulfide (lime-sulfur) were effective.

* ————
1961. SEED SOWING TOOL. U. S. Forest Serv. Tree Planters' Notes 45, pp. 3-4, illus.
A hand tool with a rake at the lower end for baring mineral soil. The hollow handle holds a day's supply of seeds and a metering device for dispensing them.

* Burton, J. D.
1961. GROWTH AND SURVIVAL IN TENNESSEE STRIP-MINE PLANTATIONS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 134.
Two-year survival and growth of planted loblolly, shortleaf, and Virginia pine were satisfactory on spoil banks, but white pine was disappointing.

Cassady, J. T.
1959. SEED REQUIREMENTS PER ACRE FOR DIRECT SEEDING. Direct Seeding in the South, 1959, a Symposium, pp. 120-128. Duke Univ.
Synopsizes information from southern foresters experienced in direct-seeding and concludes that "If I had to give a single, unqualified answer to the question of pine seed requirements for direct seeding it would be to sow 10,000 to 15,000 viable, repellent-treated seed per acre on almost any reasonable planting site for any of the major southern pines adapted to the area. Barring a major catastrophe . . . , such a rate should ensure 1,000 to 5,000 pine seedlings initially established per acre."

———— and Crowell, W. H.

1959. ROW SEEDING. Forest Farmer 18(5): 8, 12, 16, illus.
A machine for seeding pine in rows has been developed for cleared sites in the Florida sandhills. Row seeding requires less seed than broadcast methods and gives more even distribution.

* Croker, T. C., Jr.

1956. CAN THE SHELTERWOOD METHOD SUCCESSFULLY REGENERATE LONGLEAF PINE? Jour. Forestry 4: 258-260, illus.
In south Alabama and elsewhere, good stands of longleaf pine have been accidentally established by the release of advance reproduction. The circumstances resembled shelterwood cutting and suggest that this system may be a practical way of regenerating longleaf.

———

1956. LONGLEAF PINE SEEDLINGS DAMAGED WHEN SEED TREES ARE TRACTOR-LOGGED. Jour. Forestry 54: 401.
Though logging conditions were good, the stocking of longleaf seedlings in an Alabama forest was reduced from 83 to 76 percent, and many survivors were damaged. Those that had emerged from the grass were the most vulnerable.

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1957. SCALPING AIDS LONGLEAF SEEDLING CATCH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 112.
Scalping the seedbed just before seedfall more than doubled the catch of longleaf pine on a sandy site in southern Alabama.

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1959. DIRECT SEEDING LONGLEAF PINE IN SOUTH ALABAMA AND NORTHWEST FLORIDA. Ala. Conserv. 30(5): 18-19, 27, illus.
In trials, good results were achieved with longleaf, slash, loblolly, and shortleaf pine, but not with sand pine. All seed was coated with Arasan to repel birds and with endrin to deter rodents.

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1959. FURROW SEEDING—A NEW WAY TO REDUCE PINE REGENERATION COSTS. Ala. Forest Prod. 2(9): 108-109, illus.
See next entry.

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1960. THE H-C FURROW SEEDER. U. S. Forest Serv. Tree Planters' Notes 43, pp. 15-16, illus.
This machine prepares a seedbed and sows pine in one operation, with only a tractor driver for a crew.

Czabator, F. J.

1961. PLENTIFUL SEEDLINGS A FORESTRY RESEARCH SUCCESS. South. Lumberman 203(2537): 116-118, illus.
Advances in soil management and control of diseases and weeds enabled southern nurseries to raise their production from 0.5 million seedlings in 1924 to nearly 2.1 billion in 1960.

Davis, Broward.

1956. THE CHIPOLA CHIMNEY: A CONE KILN FOR RESEARCH USE. Jour. Forestry 54: 845-846, illus.
Instructions for making and using a small kiln developed at the Chipola Experimental Forest.

Derr, H. J.

1955. BED DENSITY AFFECTS LONGLEAF VIGOR. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 97.
See next entry.

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1955. SEEDBED DENSITY AFFECTS LONGLEAF PINE SURVIVAL AND GROWTH. U. S. Forest Serv. Tree Planters' Notes 20, pp. 28-29.
Reducing nursery seedbed density from 30 to 10 seedlings per square foot improved survival and first-year growth of outplanted longleaf in Louisiana.

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1957. EFFECTS OF SITE TREATMENT, FERTILIZATION, AND BROWN-SPOT CONTROL ON PLANTED LONGLEAF PINE. Jour. Forestry 55: 364-367, illus.
In central Louisiana, burning, furrowing, or disking a 5-year-old grass rough had little effect on survival or early growth of planted longleaf pine. Spraying the seedlings with bordeaux mixture controlled the brown-spot needle blight and thereby enabled more than 75 percent of the surviving stand to start height growth in the fourth and fifth years. Fertilizing seedlings at planting time depressed growth by stimulating competing grasses except on furrowed strips where the grasses were completely eliminated.

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1958. DIRECT SEEDING: A FAST, RELIABLE METHOD OF REGENERATING LONGLEAF PINE. U. S. Forest Serv. Tree Planters' Notes 32, pp. 15-20. *Also in* Tree Planters' Notes 33, pp. 20-25.
Recent developments.

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1959. NEW RATES FOR REPELLANTS IN DIRECT SEEDING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 123.
See second entry below.

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1959. TIME OF YEAR FOR DIRECT SEEDING. Direct Seeding in the South, 1959, a Symposium, pp. 114-118. Duke Univ.
February appears to be the best time for sowing loblolly, shortleaf, and possibly slash pine. Seed should be stratified and coated with repellents. Longleaf is sown unstratified, usually in late November or early December.

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1959. WHAT'S NEW IN BIRD REPELLANTS FOR DIRECT SEEDING? Forests and People 9(4): 40, 44-45. *Also as* FAO Forestry Equipment Notes A. 25. 61, 2 pp. August 1961.
Lower dosages are now feasible for two of the three repellents used widely in seeding southern pines. Several new chemicals show promise.

* ————

1960. PREVENTING STICKER FAILURES IN DIRECT SEEDING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 128.
Precautions for handling the latex and asphalt stickers commonly used to bond repellents to pine seed.

* ———— and Cossitt, F. M.

1955. LONGLEAF PINE DIRECT SEEDING. Jour. Forestry 53: 243-246, illus.
Experience during 1946-52.

* ———— and Mann, W. F., Jr.

1959. GUIDELINES FOR DIRECT-SEEDING LONGLEAF PINE. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 171, 22 pp., illus. *Reprinted in* Forest Farmer, 1960. Six parts. I.—19(4): 6-7, 15-17; II.—19(5): 16-20; III.—19(6): 28, 30, 32; IV.—19(8): 14-16; V.—19(9): 12-14, 16; VI.—19(10): 14-15, illus.
Summarizes knowledge on major aspects of longleaf seeding, from initial planning to management of the stand.

FARRAR, R. M., JR.

1959. SEEDED AND PLANTED PINES GROW AT SIMILAR RATES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 122.

In south Alabama and west Florida, average height growth for the first two years in the field was 0.7 foot annually for seeded pines, and 0.79 foot for planted ones. Loblolly, slash, and shortleaf were represented.

* FASSNACHT, D. L.

1955. BAR-SLIT GOOD FOR SANDHILL HAND PLANTING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 95.

In west Florida, longleaf and slash pine seedlings planted in slits made with a planting bar survived as well as those planted by hand in holes made with a post-hole digger.

* FERGUSON, E. R.

1957. CAUSES OF FIRST-YEAR MORTALITY OF PLANTED LOBLOLLY PINES IN EAST TEXAS. Soc. Amer. Foresters Proc. 1956: 89-92, illus.

In a dry summer growth and survival were best where competing vegetation had been eliminated or reduced before seedlings were planted. When soil moisture was more plentiful, site preparation had little effect. Pine reproduction weevils killed many seedlings on areas from which mature pines had recently been cut.

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1959. WOOD TREATED WITH PENTA CAN DAMAGE PINE NURSERY SEEDLINGS. U. S. Forest Serv. Tree Planters' Notes 38, pp. 21-22.

If a preservative is needed for wood that will be close to freshly germinated southern pine seedlings, a good choice might be 0.2 percent metallic copper solution of copper naphthenate in diesel oil or one of the other lighter hydrocarbons.

* ——— and STEPHENSON, G. K.

1955. PINE REGENERATION PROBLEMS IN EAST TEXAS: A PROJECT ANALYSIS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 144, 72 pp., illus.

Comprehensive review.

* GAMMAGE, J. L., and MAISENHELDER, L. C.

1960. REFRIGERATION PROLONGS VIABILITY OF COTTONWOOD SEED. U. S. Forest Serv. Tree Planters' Notes 43, pp. 5-6.

At 40°F. seed remained viable for 3 to 5 weeks; at room temperature it germinated poorly after 1 week.

* GRANO, C. X.

1957. INDICES TO POTENTIAL CONE PRODUCTION OF LOBLOLLY PINE. Jour. Forestry 55: 890-891, illus.

An 8-year study in southern Arkansas suggests that seed trees should be 12 inches or more in diameter, should have large, dense crowns, and should show evidence of having produced cones in the past.

* ———

1958. HOW TO RECOGNIZE GOOD SEED TREES. Forest Farmer 17 (4): 13, illus.

Pictoral summary. See also the entry immediately above.

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1958. TETRAZOLIUM CHLORIDE TO TEST LOBLOLLY PINE SEED VIABILITY. Forest Sci. 4: 50-53, illus.

Results agreed closely with those from sandflat checks. The chemical test is independent of seed dormancy but does not reveal the need for stratification nor measure germinative vigor. It yields results on short notice—48 hours or less—but is slower than sandflat tests in terms of the number of seeds that can be tested per man-hour.

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1960. STRANGLING AND GIRDLING EFFECTS ON CONE PRODUCTION AND GROWTH OF LOBLOLLY PINE. Jour. Forestry 58: 897-898, illus.

Cone production was neither promoted nor hindered. Diameter and height growth were unimpaired. The test was on trees that were 3 to 15 inches in d.b.h. and that showed no sign of having borne cones previously.

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1961. GERMINATION OF STRATIFIED LATEX-COATED LOBLOLLY PINE SEED AFTER SUBMERGENCE. Jour. Forestry 59: 452.

Submergence for 14 days had no deleterious effect.

* ———

1961. SHORTLEAF-LOBLOLLY REPRODUCTION LOSSES MODERATE, FOLLOWING SEED TREE FELLING. Jour. Forestry 59: 24-25, illus.

Seed trees numbered 22 per acre and were 10 to 33 inches in d.b.h. Their removal reduced from 84 to 70 percent the stocking of advanced reproduction, some of which was 19 years old.

* HARRINGTON, T. A.

1957. MAKING BIG IF'S SMALLER IN DIRECT SEEDING. South. Lumberman 195(2441): 129-130, illus.

On the Cumberland Pleateau of Tennessee, shortleaf and loblolly pine were successfully direct-seeded in a stand of low-grade oaks and hickories.

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1958. VIRGINIA PINE SEEDED IN TENNESSEE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 114. *Also in* The Unit, News Letter 75, p. 30.

A good catch was obtained by sowing 15,000 seeds per acre in fire-plow furrows through a stand of upland hardwoods.

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1959. PLANTED PINES SHOW MORE INITIAL HEIGHT GROWTH THAN SEEDED PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 123.

On the Cumberland Plateau, loblolly and shortleaf pine nursery stock grew twice as tall the first year in outplanting as did direct-seeded pines.

* ———

1959. SEEDING SOUTHERN PINES ON THE CUMBERLAND PLATEAU. South. Lumberman 199(2489): 224.

Shortleaf, loblolly, and Virginia pine have been established by sowing repellent-treated seed in poorly stocked hardwood stands. First-year survival was better on sites prepared by disking or burning than on unprepared sites. March sowing produced fewer seedlings than December and January sowings.

* ———

1960. DIRECT SEEDING WHITE PINE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.

In a stand of low-grade hardwoods in Tennessee, seed coated with Arasan-75 and endrin produced 2,350 white pine seedlings per acre after 1 growing season. Sowing was on disked ground.

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1960. FROST HEAVING RUINS SPOIL-BANK SEEDING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 128.

On a 1-year-old spoil bank in southern Tennessee, freezing and thawing of the soil uprooted 94 percent of an initially successful seeding of shortleaf pine.

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1960. STRATIFYING REPELLENT-TREATED PINE SEED. U. S. Forest Serv. Tree Planters' Notes 42, p. 5.

Germinative capacity of loblolly, shortleaf, and Virginia pine may be seriously reduced if fresh seed is repellent-coated and then stratified. Cold storage for a few months may largely forestall damage from later repellent treatment and stratification.

* Hatchell, G. E.
1961. A LOOK AT 9-YEAR-OLD SEEDED LOBLOLLY PINE. Forests and People 11(3): 25, 44-45, illus.
The pines have expressed dominance without evidence of stagnation. Dominants are growing nearly as fast as in planted stands. Disking for seedbed preparation appears to have stimulated early growth.

* Hebb, E. A.
1955. OPERATION SANDHILLS—TWO YEARS LATER. South. Lumberman 191(2393): 159-160, illus.
Two years after being planted on the sandhills of western Florida, slash pine has better survival, growth, and form than loblolly, shortleaf, longleaf, or Monterey pine.

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1955. SEEDFALL AND CUTTING SYSTEMS IN TEXAS SHORTLEAF STANDS. Jour. Forestry 53: 846-847.
In a good seed year, seedfall varied greatly on areas cut by different systems. Fifty-nine percent of the seed fell in November and 25 percent in December.

* ———
1955. SLASH PINE—PROMISING SANDHILLS SPECIES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 100.
Two years after being planted on carefully prepared sites in west Florida, slash pine seedlings averaged nearly 2 feet tall.

Hopkins, Walt.
1957. AN EYE TO THE FUTURE. Gulf Coast Cattleman 23(3): 15-16, illus.
A private company has established 11,500 acres of slash pine plantations in western Florida, some of them on sandhill lands.

Huckenpahler, B. J.
1955. AUXINS FAIL TO STIMULATE ROOTING OF YELLOW-POPLAR CUTTINGS. Bot. Gaz. 117: 73-75.
Indolebutyric acid, indoleacetic acid, and naphthalene-acetic acid were applied in a variety of concentrations and immersion periods to cuttings made at several seasons from wood of different ages.

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1957. WANTED: A METHOD OF ROOTING YELLOW-POPLAR CUTTINGS. Jour. Forestry 55: 425.
See preceding entry.

* Johnson, R. L.
1958. CLIP OR DEEP-PLANT CYPRESS? U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 116.
Treatments to reduce transpiration did not improve survival and early growth of baldcypress seedlings planted in the Mississippi Delta.

* ——— and Burkhardt, E. C.
1961. COTTONWOOD SEEDS-IN ON BULLDOZED STRIPS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 135.
In a cutover hardwood stand cottonwood was regenerated naturally by removing the overstory and then cutting shallow trenches with a bulldozer.

Kaloyereas, S. A., Mann, W. F., Jr., and Miller, J. C.
1961. EXPERIMENTS IN PRESERVING AND REVITALIZING PINE, ONION, AND OKRA SEEDS. Econ. Bot. 15: 213-217, illus.
Longleaf seed must be dried to 10 percent or less if stored at temperatures near or below freezing. Drying to 5 or 6 percent, however, impaired viability. Carbon dioxide placed in sealed containers with seeds seemed to improve germinability after storage, but carbon dioxide plus ethylene oxide was not beneficial.

Koshi, P. T.
1960. DEEP PLANTING HAS LITTLE EFFECT IN A WET YEAR. U. S. Forest Serv. Tree Planters' Notes 40, p. 7.
Undersized slash and loblolly seedlings were planted in a Texas field with a stand of Bermuda grass and weeds. In a dry season, deep planting might have improved survival, but in 1957 the only differences were those related to morphological grade of the stock.

Krinard, R. M.
1959. NO ADVANTAGE TO CLIPPING BALDCYPRESS PLANTING STOCK. U. S. Forest Serv. Tree Planters' Notes 36, p. 14.
Clipping or deep planting did not improve either the survival or growth of seedlings planted in heavy clay.

* McClurkin, D. C.
1960. LEGUMES FAIL TO BENEFIT LOBLOLLY PINE PLANTINGS IN NORTH MISSISSIPPI. U. S. Forest Serv. Tree Planters' Notes 43, pp. 11-12.
The legumes, Lespedeza bicolor, L. sericea, *and* Trifolium incarnatum, *were seeded among newly planted pine seedlings. Sites were gullied or severely sheet-eroded.*

* McKnight, J. S., and Maisenhelder, L. C.
1960. CHANGE TO QUICK TREES. South. Lumberman 201 (2511): 30-31, illus. *Also in* U. S. Forest Serv. Tree Planters' Notes 51, pp. 23-24, illus. April 1962. *Also in* Forest Farmer 21(13): 12, illus. 1962.
On suitable sites and with cultivation during the first year, cottonwood plantings make remarkable growth.

* McLemore, B. F.
1959. CONE MATURITY AFFECTS GERMINATION OF LONGLEAF PINE SEED. Jour. Forestry 57: 648-650.
Germination was best when cones were picked just as they were opening on the trees.

* ———
1960. SMALL, FAST-DRYING CONE KILN. Forest Farmer 19(13): 10-11, 15, illus. *Also in* U. S. Forest Serv. Tree Planters' Notes 47, pp. 9-12, illus. 1961.
Construction details of a gas-fired kiln that will dry 28 bushels of pine cones in 48 hours.

* ———
1961. ESTIMATING PINE SEED YIELDS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 134.
Formulae for predicting yield of seeds from the number of full seeds exposed when longleaf, slash, and loblolly cones are sliced longitudinally.

* ———
1961. HILA OF FULL AND EMPTY LONGLEAF PINE SEEDS ARE DISTINGUISHABLE. Forest Sci. 7: 246, illus.
Pinus palustris *seeds with prominent hila are full; those with faint scars are empty.*

* ———
1961. PROLONGED STORAGE OF LONGLEAF CONES WEAKENS SEED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132.
If the seed is to be stored, cones should not be held in burlap bags for more than 30 days between collection and extraction.

* McLemore, B. F.
1961. STORAGE OF LONGLEAF PINE SEED. U. S. Forest Serv. Tree Planters' Notes 47, pp. 15-19, illus.
If its moisture content is held to 10 percent or less, longleaf seed can be stored at least 5 years at temperatures of 34° F. or below.

* ———— and Czabator, F. J.
1961. LENGTH OF STRATIFICATION AND GERMINATION OF LOBLOLLY PINE SEED. Jour. Forestry 59: 267-269, illus.
Germination tests of seed stratified 0, 15, 30, 45, and 60 days were evaluated by computing germination values (GV), which combine germinative energy and capacity. Increases in length of stratification usually increased GV; the greatest increase occurred between 0 and 15 days and the smallest between 45 and 60 days.

* McReynolds, R. D.
1960. MORTALITY OF NEWLY GERMINATED SOUTHERN PINE SEEDLINGS FOLLOWING INUNDATION. U. S. Forest Serv. Tree Planters' Notes 43, pp. 23-25.
At ages of 25 days from seed, most loblolly and slash pine seedlings survived 20 days of flooding, but shortleaf and longleaf died after 12 days. Summer flooding was more damaging than spring flooding.

* Maisenhelder, L. C.
1956. COST OF PLANTING COTTONWOOD. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 106.
Site preparation, planting, and plantation care for one season cost $18 per acre on pasture land and $32 on wooded areas.

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1957. PROPAGATION OF SOME DELTA HARDWOODS BY ROOTING. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 55-58.
Cottonwood and black willow have rooted satisfactorily both in the nursery and in plantations. Sycamore and green ash have done well in nursery tests. The oaks will require more intensive testing. Sweetgum is the only species tested that has failed to produce some rooting.

* ———
1957. TIPS FOR PLANTING SOUTHERN HARDWOODS. South. Lumberman 195(2441): 93-94, illus.
Though there are yet few satisfactory commercial plantations in the South, successful ones can be established if planting is restricted to the better soils, if the species are suited to the site, and if competing vegetation is kept down until the trees are well established.

* ———
1958. NATURAL REGENERATION FOLLOWING SELECTION CUTTING IN BOTTOMLAND HARDWOODS. La. State Univ. Seventh Ann. Forestry Symposium Proc. 1958: 21-25.
Unless abused, most bottom-land forests reproduce satisfactorily under a system of selective cutting. Fire must be eliminated and grazing controlled. Heavy masses of ground cover will interfere with regeneration, but briars and weeds, if not too dense, act as a nurse crop.

* ———
1960. COTTONWOOD PLANTATIONS FOR SOUTHERN BOTTOM LANDS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 179, 24 pp., illus.
Establishing and cultivating plantations. Estimated costs and returns.

* Mann, W. F., Jr.
1956. DIRECT-SEEDING THE SOUTHERN PINES. U. S. Forest Serv. Tree Planters' Notes 25, pp. 12-19, illus.
Summarizes recommendations for longleaf pine, and reports progress with loblolly and slash.

* ———
1957. DIRECT-SEEDING THE SOUTHERN PINES. Forest Farmer 17(2): 8-9, 12, 16-18, illus. *Also in* Forestry Newsletter, Southeast. Sect. Soc. Amer. Foresters 13(2): 10-15. *Also in* Forest Farmer (Sixth Manual ed.) 17(7): 73-75, illus. 1958. *Also in* (Seventh Manual ed.) 18(8): 72-75, illus. 1959. *Also in* (Eighth Manual ed.) 19(7): 87-90, illus. 1960. *Also in* (Ninth Manual ed.) 20(7): 58-61, illus. 1961.
Methods for seeding longleaf, loblolly, and slash pine.

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1958. GUIDES FOR DIRECT SEEDING THE SOUTHERN PINES. Forests and People 8(3): 16-17, 44, 47-48, 51-52, illus.
Longleaf, loblolly, and slash pine.

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1958. OUR CURRENT RESEARCH NEEDS: SEEDING AND PLANTING. Forest Farmer 18(2): 12-13, illus.
Especially needed is information on the regeneration of hardwoods, on seed dormancy and other aspects of seed storage, on means of reducing losses from predators and parasites, and on methods of correlating direct-seeding techniques with natural seedfall.

* ———
1959. INDUSTRY TESTS LOBLOLLY DIRECT SEEDING. Forests and People 9(1): 22-23, 30-32, illus.
Results from 18 separate seedings on a total of 5,900 acres.

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1959. PREPARING SEED FOR DIRECT SEEDING. Direct Seeding in the South, 1959, a Symposium, pp. 52-59. Duke Univ.
Cold stratification, to speed germination, and repellent coating of seed, to ward off predators, are two of the most critical jobs confronting the direct seeder.

* ———
1961. DIRECT SEEDING COMES TO THE SOUTH. Soc. Amer. Foresters Proc. 1960: 15-18, illus.
Summarizes the development, at Alexandria, Louisiana, of a method for seeding longleaf and other southern pines, reviews evidence that the technique is finding wide use, and describes a large commercial seeding.

* ———— and Burkhalter, H. D.
1961. THE SOUTH'S LARGEST SUCCESSFUL DIRECT-SEEDING. Jour. Forestry 59: 83-87, illus.
An industrial firm has direct-seeded 18,545 acres of cutover longleaf land. Direct costs were less than half of what would have been required for planting, capital outlay and manpower requirements were smaller, and supervision was simpler.

———— and Derr, H. J.
1955. NOT FOR THE BIRDS. Forests and People 5(3): 32-33, illus. *Also in* U. S. Forest Serv. Tree Planters' Notes 20, pp. 3-6, illus.
Morkit, a commercial bird repellent, has given excellent results on longleaf seed in Louisiana.

———— and Derr, H. J.
1956. DIRECT SEEDING OF LONGLEAF PINE. Forest Farmer 15(6): 4-6, 18, illus.
Techniques, including use of Morkit as a bird repellent.

———— and Derr, H J.
1958. REGENERATION OF UNDERSTOCKED LONGLEAF STANDS . . . SKILL NOT LUCK! Forests and People 8(2): 20-21, 53, illus.

A 250-acre area with a partial seed source was regenerated with natural seedfall supplemented by direct seeding. Gives a schedule for regenerating understocked, second-growth longleaf stands.

* ———— and Derr, H. J.
1961. GUIDELINES FOR DIRECT-SEEDING LOBLOLLY PINE. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 188, 23 pp., illus.
Site evaluation and preparation, seed procurement and treatment, methods and rate of sowing, seedling inventories, costs.

* ———— Derr, H. J., and Meanley, Brooke.
1955. A BIRD REPELLENT FOR LONGLEAF SEEDING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 99.
See next entry.

* ———— Derr, H. J., and Meanley, Brooke.
1956. A BIRD REPELLENT FOR DIRECT SEEDING OF LONGLEAF PINE. Jour. Forestry 54: 190-191.
Morkit has given excellent results in central Louisiana.

———— Derr, H. J., and Meanley, Brooke.
1956. BIRD REPELLENTS FOR DIRECT SEEDING LONGLEAF PINE. Forests and People 6(3): 16-17, 48.
Morkit has been withdrawn from the U. S. market, but several other preparations are likely to be acceptable replacements. One of these is Arasan.

———— and Kingsley, C. E.
1958. BIRD CONTROL IN FOREST NURSERIES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 113.
Bird depredations in southern pine nurseries can be stopped with repellents developed for direct seeding.

* ———— and Russell, T. E.
1956. RINGING STIMULATES LONGLEAF CONE PRODUCTION. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 103.
See next entry.

———— and Russell, T. E.
1957. LONGLEAF CONE PRODUCTION DOUBLED BY RINGING. U. S. Forest Serv. Tree Planters' Notes 28, pp. 6-7, illus.
Two half-circles were cut through the cambium on opposite sides of the bole, slightly above stump height. Trees smaller than 10 inches in d.b.h. did not respond, probably because they were too small to bear cones abundantly.

* Maple, W. R.
1960. LOBLOLLY FOR THE ARKANSAS OZARKS? U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 126.
Vigorous growth of plantations indicates that loblolly may be suitable for short rotations, even though it is not native.

* ————
1961. FOREST TREES FOR THE ARKANSAS OZARKS. Ark. Farm Res. 10(5): 7.
Shortleaf pine remains the preferred species for planting. Loblolly and Virginia pine are possible alternatives for short rotations. Hardwood planting has not been consistently successful.

* ————
1961. TREATED SHORTLEAF PINE SEED CAN BE STORED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 136. *Also in* Amer. Tree Farmer and Forestry Digest, Jan.-Feb. 1962, p. 5.
Seed that has been stratified and coated with repellents for direct seeding may be stored for several months.

Meanley, Brooke, and Blair, R. M.
1957. DAMAGE TO LONGLEAF PINE SEEDLINGS BY COTTON RATS. Jour. Forestry 55: 35.
Recent attacks in central Louisiana are a reminder that this rodent can severely damage young pines when it finds a favorable habitat. It seems partial to longleaf but attacks other species.

———— Mann, W. F., Jr., and Derr, H. J.
1956. COTTON RATS DAMAGE LONGLEAF SEEDLINGS. Forests and People 6(4): 42-43, illus.
See preceding entry.

————Mann, W. F., Jr., and Derr, H. J.
1956. NEW BIRD REPELLENTS FOR LONGLEAF SEED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 105. *Also in* The Unit, News Letter 66, p. 11. *Also in* U. S. Forest Serv. Tree Planters' Notes 28, p. 8. 1957.
The bird-repellent Morkit has been withdrawn from the U. S. market, but several other chemicals are good substitutes.

* Mignery, A. L., and Yeatman, H. C.
1960. MICE HINDER PINE SEEDING ON CUMBERLAND PLATEAU. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 129.
A thiram-endrin coating repelled white-footed mice from seeds of loblolly, Virginia, and shortleaf pine.

Muntz, H. H.
1961. RECENT ADVANCES IN PLANTING AND DIRECT SEEDING. *In* Advances in Management of Southern Pine. La. State Univ. Tenth Ann. Forestry Symposium Proc. 1961: 34-39.
Brief review.

Neelands, R. W.
1961. HOW TO MAKE INSTANT TREES! Forests and People 11(4): 28-29, illus. *Also in* Forest World, pp. 30-31. June 1962.
Two years after being planted as cuttings, cottonwoods on silt loam near Greenville, Mississippi, averaged 22 feet tall and 3.5 inches in diameter.

* Russell, T. E.
1958. SPACING—ITS ROLE IN THE GROWTH OF PLANTED SLASH PINE. South. Lumberman 197(2465): 115-117, illus.
" . . . Spacing of 6 by 8 feet—908 trees per acre—will, when initial survival is 80 percent or better, meet the objectives of providing not only satisfactory early volume and diameter growth, but also sufficient stocking to sustain losses to disease and storms. Wider spacings, such as 8 by 8 feet, probably will not."

————
1958. THE DIRECT SEEDING OF SOUTHERN PINES. Amer. Pulpwood Assoc. Tech. Paper 58-P26, 8 pp., illus.
Recommendations for longleaf, loblolly, and slash pines.

Scarbrough, N. M., and Allen, R. M.
1954. BETTER LONGLEAF SEEDLINGS FROM LOW-DENSITY NURSERY BEDS. U. S. Forest Serv. Tree Planters' Notes 18, pp. 29-32.
Stock from beds with not more than about 24 seedlings per square foot survived better in the field and began height growth sooner than seedlings from denser beds.

* Scheer, R. L.
1957. SAND PINE—SCRUB OR TIMBER TREE? South. Lumberman 195(2441): 191-193, illus.
In the deep sands of west Florida, sand pine has outgrown other southern pines (notably slash) on cleared sites and has been the only pine able to compete with undisturbed oaks and wiregrass. First-year survival, however, has been poor.

* Scheer, R. L.
1959. comparison of pine species on florida sandhills. Jour. Forestry 57: 416-419, illus.
So far, slash pine has performed better than loblolly, shortleaf, and longleaf. Monterey pine has been a total failure.

* ———— and Hodges, J. D.
1960. planted sand pine grows well on unprepared florida sandhills. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 7-8, illus.
Sand pine grew well in competition with wiregrass and small oaks; other species of southern pines required release.

Schoenike, R. E.
1955. why pine seed crops fail. Forest Farmer 14(10): 10.
In March 1955, loblolly and shortleaf pines near Crossett, Arkansas, bore abundant flowers, but heavy rains washed the loblolly pollen out of the air, and a late freeze ruined the shortleaf flowers.

* Schomaker, C. E.
1956. loblolly pine succeeds on spoil banks. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 102.
The spoil banks were in north Alabama.

* ————
1957. topography and yellow-poplar growth. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 107.
Two-year results; see Smalley, 1961.

* ————
1958. two-year results of planting yellow-poplar in north alabama. Jour. Forestry 56: 37-38, illus.
For 5-year results, see Smalley, 1961.

* Shoulders, Eugene.
1959. caution needed in fall applications of nitrogen to nursery stock. U. S. Forest Serv. Tree Planters' Notes 38, pp. 25-27.
"This study further demonstrates the folly of prescribing fertilization without adequate knowledge of the needs of the plant at the particular time the fertilizer is to be available, and the extent to which these needs will be supplied by nutrients already in the soil."

* ————
1959. root pruning boosts longleaf survival. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 120.
See next entry.

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1959. root pruning boosts longleaf survival. U. S. Forest Serv. Tree Planters' Notes 36, pp. 15-19, illus.
Recommends that pruning be done at a depth of approximately 7 inches and 2 or 3 months before the seedlings are lifted from the nursery bed.

* ————
1960. seedbed density influences production and survival of loblolly and slash pine nursery stock. U. S. Forest Serv. Tree Planters' Notes 42, pp. 19-21.
See second entry below.

* ————
1960. should pines be root-pruned in nursery beds? U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 127.
In contrast to results elsewhere, root pruning in a nursery near Pollock, Louisiana, did not check unwanted late-season height growth of longleaf, loblolly, and slash pine.

* ————
1961. effect of nursery bed density on loblolly and slash pine seedlings. Jour. Forestry 59: 576-579, illus.
For both species, densities of about 40 seedlings per square foot at lifting time were better than densities of 10, 20, and 30 in terms of seedlings that were able to establish themselves in the field. Lowering density below 40 improved morphological quality and, in a droughty year, field survival also.

* ————
1961. effect of seed size on germination, growth, and survival of slash pine. Jour. Forestry 59: 363-365.
Small seeds yielded smaller seedlings and fewer of plantable grade than medium and large seeds, but growth during the first year in the field eliminated much of the height difference present in the nursery. Nursery germination and field survival were not related to seed size.

* Siegel, W. C.
1961. contract machine planting favored. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 133.
On loblolly pine land in northwest Louisiana, the typical plantation is machine-planted by a contractor at a spacing of 6 by 8 feet.

* ————
1961. initial survival of loblolly plantations. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132.
In private plantations about Shreveport, Louisiana, first-year survival was better under hardwoods than in the open, and better for hand planting than for machine planting. Nearly all plantations received some release.

* Smalley, G. W.
1961. in north alabama, topographic position is key to yellow-poplar sites. Forest Farmer 20(12): 14, 16, illus.
During 5 years, planted yellow-poplars have grown best in bottoms and on middle and lower north slopes, less rapidly on upper north and middle south slopes, and poorly on upper south slopes.

* ————
1961. loblolly unresponsive to fertilizer in alabama test. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132.
Fertilizing with 200 to 600 pounds N per acre failed to stimulate height growth of a 4-year-old plantation.

* Smith, J. L., Bower, D R., and Blocker, W. W.
1961. seedling mortality in ouachitas. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 134.
Mortality of natural shortleaf pine reproduction varies with aspect, cover, and depth of soil.

Smith, L. F.
1955. development of longleaf pine seedlings near large trees. Jour. Forestry 53: 289-290.
Although earlier removal is preferable large pines and oaks may be left for 5 or 6 years without serious mortality among the pine reproduction. See also second entry below.

* ————
1960. early growth of slash pine on upland and wet sites. Jour. Forestry 58: 720-725, illus.
In plantations in south Mississippi, height growth was considercbly greater on uplands than in bottom lands. Growth began between March 1 and 15 each year; it continued about 152 days but was 90 percent complete by July 1.

* ————
1961. growth of longleaf pine seedlings under large pines and oaks in mississippi. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 189, 4 pp., illus.

When brown-spot needle blight was controlled, longleaf seedlings survived and started height growth near large pines and oaks. Oaks were severer competitors than pines. See second entry above.

* ———

1961. RAPID GROWTH OF SLASH AND LOBLOLLY PINES ON CULTIVATED PLOTS. U. S. Forest Serv. Tree Planters' Notes 46, pp. 9-10, illus.

Slash pines averaged 13.0 feet tall and loblolly pines 14.2 feet after 4 years in a cultivated plantation in southern Mississippi. Fertilizer did not speed growth.

* ———

1961. TREE PERCENT ON BURNED AND UNBURNED LONGLEAF SEEDBEDS. Jour. Forestry 59: 201-203, illus.

Seedling establishment in south Mississippi was markedly aided by a preseedfall burn to eliminate the ground cover of grass and needles. The study also yielded data on distribution of seedfall and seedlings.

* SNOW, G. A., and ALLEN, R. M.

1961. DAMAGE TO PINE SEEDLINGS BY SANTOMERSE SX. U. S. Forest Serv. Tree Planters' Notes 45, pp. 25-26, illus.

When used at rates somewhat greater than are common in the South, this surfactant stunted nursery seedlings of slash, loblolly, and shortleaf pine.

* STRANSKY, J. J.

1960. LET PLOWED GROUND SETTLE BEFORE PLANTING PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 128.

In east Texas, loblolly pines were planted in mid-January on undisturbed soil, on fresh furrows, and on ground deeply plowed and disked the preceding October. Fall rains were light, and by January the plowed sites were drier than the others. The dryness probably reduced pine survival.

* THAMES, J. L.

1961. EFFECTS OF WAX COATINGS ON LEAF TEMPERATURES AND FIELD SURVIVAL OF PINUS TAEDA SEEDLINGS. Plant Physiol. 36: 180-182, illus.

Wax transpiration retardant reduced survival of seedlings planted on a sandy soil in Mississippi. Under radiant heat in the laboratory, temperature of waxed leaves rose 4.4° F. above that of normal leaves.

* URSIC, S. J.

1956. BALE STORAGE EFFECTIVE FOR LOBLOLLY PINE SEEDLINGS. Jour. Forestry 54: 815-816, illus.

In north Mississippi, loblolly pine seedlings can be successfully stored in standard Forest Service bales for periods up to 5 weeks. Such storage is more convenient and cheaper than conventional heeling-in.

* ———

1956. BALE STORAGE OF LOBLOLLY SEEDLINGS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 103.

See preceding entry.

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1956. LATE WINTER PRELIFTING FERTILIZATION OF LOBLOLLY SEEDBEDS. U. S. Forest Serv. Tree Planters' Notes 26, pp. 11-13.

Fertilizer decreased first-year survival of seedlings planted on adverse sites in north Mississippi, and did not benefit vigor and height growth.

———

1959. SITES AND SEEDLING GRADES INFLUENCE LOBLOLLY GROWTH. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 122.

Seedlings planted on a ridge in north Mississippi, under a deadened overstory of hardwoods, made better early height growth than those planted on eroded old fields. Planting stock with stems averaging 7 inches long grew faster than stock with 5-inch stems.

———

1960. WHAT'S YOUR SURVIVAL? U. S. Forest Serv. Tree Planters' Notes 40, pp. 3-4.

Techniques for sampling first-year survival of pine plantations at minimum cost and effort.

* ———

1961. FIRST YEAR CRITICAL FOR LOBLOLLY ON ERODED LANDS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 136.

Three-fourths of the mortality occurred in the first year. The test was in north Mississippi.

* ———

1961. LETHAL ROOT TEMPERATURES OF 1-0 LOBLOLLY PINE SEEDLINGS. U. S. Forest Serv. Tree Planters' Notes 47, pp. 25-28, illus.

Seedlings survived outplanting after their roots had been immersed for 5 minutes in water heated to 48° C. Longer immersions or higher temperatures caused mortality. Baled seedlings survived slightly higher temperatures, but indications were that stock is not worth planting if heated to more than 50° C.

* ———

1961. PIT STORAGE OF BALED LOBLOLLY SEEDLINGS. U. S. Forest Serv. Tree Planters' Notes 45, pp. 13-14. *Also in* Miss. Farm Res. 23(11): 2, illus. 1960.

In north Mississippi, baled loblolly pine planting stock has been stored for 6 weeks in earth pits.

* ———

1961. TOLERANCE OF LOBLOLLY PINE SEEDLINGS TO SOIL MOISTURE STRESS. Ecol. 42: 823-825, illus.

In pots of light- to medium-textured soils, loblolly pine and little bluestem grass survived at the ultimate wilting point of the sunflower when needle moisture content dropped to 80 percent; pines failed to recover when watered.

WAKELEY P. C.

1957. A GUIDE TO THE PLANTING OF SOUTHERN PINES. Forest Farmer 17(1): 10-11, illus. *Also in* Forest Farmer (Sixth Manual ed.) 17(7): 80-81, illus. 1958. *Also in* (Seventh Manual ed.) 18(8): 78-79, illus. 1959. *Also in* (Eighth Manual ed.) 19(7): 85-86, illus. 1960.

Planting policies and plans, cone collection, plantation establishment and care.

* ——— and CAMPBELL, T. E.

1960. SEEDLESS LONGLEAF CONES CAN MATURE AND OPEN. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 127.

An artificially pollinated flower produced a cone with no seeds, either filled or empty.

——— and MANN, W. F., JR.

1957. REGENERATION—WHEN, WHY, AND HOW. First tech. session, Gulf States Sect. Soc. Amer. Foresters Proc. 1957: 12-18.

"We . . . predict that, even after the greater part of the South's currently idle acreage has been planted, artificial regeneration will level off at a higher rate per year than has hitherto been assumed. It will do so for two reasons. One is that artificial regeneration will be increasingly preferable to waiting for natural reproduction. The other is that, increasingly as time goes on, planting or direct seeding will enable us to replace nature's casual mixture of good, poor, and indifferent trees with uniformly better ones."

Walker, L. C., and Davis, V. B.
1956. seed trees retard longleaf pine seedlings. Jour. Forestry 54: 269, illus.
Longleaf seed trees in southern Alabama reduced survival and vigor of seedlings well beyond the spread of the tree crowns. Thus some other factor, probably root competition, limits longleaf seedling growth more than shading does.

* Williston, H. L.
1955. fifth-year results of hardwood species adaptability studies. Papers Presented Forestry Dept. Sect. Meet., 1955 Ann. Res. Conf., Miss. Agr. Expt. Sta., pp. 3-9.
Loblolly pine seems best for underplanting depleted stands of upland hardwoods in north Mississippi. White ash survived well and is worth further trials on minor bottoms and lower slopes. Yellow-poplar has possibilities, but suffered considerable mortality from a canker.

———
1959. inundation damage to loblolly pine seedlings. U. S. Forest Serv. Tree Planters' Notes 36, p. 13.
Seedlings survived 15 days of complete submergence during both dormant and growing seasons.

* ——— and Huckenpahler, B. J.
1957. hardwood underplanting in north mississippi. Jour. Forestry 55: 287-290.
Of 6 species tested in the Brown Loam hills, loblolly pine had best survival and growth. White ash thrived on moist sites when it was not browsed by deer, and yellow-poplar would probably have succeeded if it had not been attacked by a canker. Black locust plantings were ruined by borers. Black walnut, when released, grew well in isolated spots on minor bottoms. White oak grew very slowly.

Woods, F. W.
1959. slash pine roots start growth soon after planting. Jour. Forestry 57: 209, illus.
In west Florida, slash pine seedlings planted in February initiated root growth earlier than longleaf and sand pine.

* ———
1960. gibberellic acid fails to stimulate growth of longleaf pine seedlings. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 17.
Concentrations ranged from 100 to 1000 ppm in water or oil sprays; 0.5 and 1.0 percent GA in lanolin emulsion was also applied in warm drops on the terminal buds.

——— Hebb, E. A., and Fassnacht, D. L.
1956. mulch not beneficial to seedlings on deep sands. Jour. Forestry 54: 595.
In western Florida, a mulch of longleaf pine needles did not increase the survival of pines planted in the sandhills, and seems to have promoted excessive temperatures around the young stems.

Yeatman, H. C.
1960. population studies of seed-eating mammals. Jour. Tenn. Acad. Sci. 35(1): 32-48, illus.
Traps on the Cumberland Plateau of Tennessee captured the white-footed mouse, Bachman's shrew, short-tailed shrew, and lesser short-tailed shrew. The last-named species is a new record for the area. White-footed mice may be troublesome where direct-seeding of pine is attempted, but seem to be repelled by seed coatings of Arasan and endrin.

* Yocom, H. A.
1955. careful logging causes little damage. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 96.
In upland pine-hardwood stands near Birmingham, Alabama, pine reproduction was not seriously diminished by tree-length logging with a small crawler tractor.

* Zahner, Robert.
1959. fertilizer trials with loblolly pine in southern arkansas. Jour. Forestry 57: 812-816, illus.
A single fertilization with nitrogen stimulated diameter growth for two years, but did not affect height growth. The addition of phosphorus, potassium, or minor elements did not increase growth more than did nitrogen alone. Total 5-year diameter growth increase attributable to fertilization was about 10 percent for a single application of 100 pounds of nitrogen per acre.

GENETICS

* Allen, R. M.
1960. changes in acid growth substances in terminal buds of longleaf pine saplings during the breaking of winter dormancy. Physiologia Plant. 13: 555-558, illus.
Greatest changes were an increase in a promoter that chromatographs similarly to indoleacetic acid in isopropanol:ammonia:water and decrease of an inhibitor found at Rf 0.6-0.7 with the same solvent.

———
1960. pole steps for climbing trees. Jour. Forestry 58: 563.
Telephone pole steps are useful on trees that are climbed repeatedly or are so far from roads that ladders must be carried considerable distances.

* ——— and Scarbrough, N. M.
1961. fertilizer and mulch aid grafting of slash pine. Jour. Forestry 59: 294.
Number of successful unions was more than doubled by fertilizer and tripled by a combination of fertilizer and pine needle mulch.

* Campbell, T. E., and Wakeley, P. C.
1961. possible refinements in controlled pollination of southern pines. South. Forest Tree Impr. Conf. Proc. 6: 121-128.
Itemizes the "Placerville" stages of longleaf pine flowers for bagging, pollination, and debagging to attain certain degrees of seed set and freedom from contamination, and evaluates laboratory germination of pollen in terms of fertilizing ability.

* Derr, H. J., and Dell, T. R.
1960. where should we get slash pine seed for louisiana? Forests and People 10(2): 30-31, illus.
A plantation in central Louisiana contains slash pines from seed collected in South Carolina, Florida, and Georgia, as well as from southern Mississippi and eastern Louisiana. At age 22 years, trees from the various sources do not differ significantly in volume, size, or amount of cankering from southern fusiform rust.

* ———— and ENGHARDT, HANS.
1960. IS GEOGRAPHIC SEED SOURCE OF SLASH PINE IMPORTANT? South. Lumberman 201(2513): 95-96, illus.
See preceding entry.

* DUFFIELD, J. W., and SNYDER, E. B.
1958. BENEFITS FROM HYBRIDIZING AMERICAN FOREST TREE SPECIES. Jour. Forestry 56: 809-815, illus.
Reviews American work in hybridization and concludes that, while successes have not yet been remarkable, hybridization has an important place among methods of improving the adaptability and the pest-resistance of forest trees.

* ECHOLS, R. M.
1959. EVALUATING TREES AND STANDS FROM LARGE INCREMENT CORES. Soc. Amer. Foresters Proc. 1958: 145-147, illus.
The Southern Institute of Forest Genetics is using 10-millimeter increment cores to study specific gravity, proportion of summerwood, fiber length, fibril angle, and other factors that influence wood quality.

* ————
1959. THE AMPLISCOPE—AN INSTRUMENT FOR WOOD-FIBER MEASUREMENTS. Jour. Forestry 57: 43-44, illus.
Construction details of a device for throwing a magnified image of small objects on a glass screen.

————
1960. EFFECTS OF GROWING SPACE ON WOOD SPECIFIC GRAVITY IN LOBLOLLY PINE. Soc. Amer. Foresters Proc. 1959: 140-143, illus.
Trees were planted in central Louisiana at square spacings of 4, 6, 8, and 10 feet, thinned to 4 densities at age 20 years and remeasured 10 years later. For all degrees of thinning, 6-foot spacings made the greatest gain in specific gravity between age 20 and age 30. The 8-foot spacing produced the most volume.

* ————
1961. LIQUID DISPERSION METHOD FOR MOUNTING WOOD FIBERS ON SLIDES. Forest Sci. 7: 369-370, illus.
Microscope slides are placed in a container filled with water (or xylene for dehydrated material). Macerated and stained fibers are stirred into the liquid and allowed to settle in an even layer. The liquid is drained off very slowly, the slides lifted out, and cover slips mounted.

GODDARD, R. E., and ALLEN, R. M.
1955. CONTROLLED POLLINATION TECHNIQUES. Third South. Forest Tree Impr. Conf. Proc. 1955: 67-70.
Current techniques with southern pines.

GRANO, C. X.
1958. A TIMESAVING SLIDE FOR TRAPPING ATMOSPHERIC POLLEN. Forest Sci. 4: 94-95, illus.
A pressure-sentitive polyester tape was mounted on a microscope slide made of aluminum.

* GRIGSBY, H. C.
1959. TWO PROMISING PINE HYBRIDS FOR THE MID-SOUTH. South. Lumberman 198(2466): 32-33, illus.
In southern Arkansas, the cross of slash and shortleaf pine is showing resistance to tipmoth and is growing faster than shortleaf pine. The hybrid of loblolly and south Florida slash pine is also doing well.

HENRY, B. W.
1955. SOUTHERN INSTITUTE OF FOREST GENETICS. Third South. Forest Tree Impr. Conf. Proc. 1955: 99-101.
Objectives and plans of the newly established Institute.

————
1956. PROGRESS AT INSTITUTE OF FOREST GENETICS. Forest Farmer 16(3): 4-5, 18, illus.
In 2 years, the Southern Institute of Forest Genetics has initiated or intensified more than 50 studies.

————
1957. BETTERING NATURE'S BEST. Forest Farmer 17(2): 10-11, illus.
"Blessed with four native pine species that rank with the best in the world, are we a bit presumptuous to think that we can make them still better? Not at all. On the contrary, it is practically a sure bet . . . . Through selection and hybridization, differentiating genetic from environmental effects, and studying the physiology of the resultant tree, the Southern Institute of Forest Genetics, along with other research organizations, is embarked on a program to 'better the best'."

* ————
1959. DISEASES AND INSECTS IN THE SOUTHWIDE PINE SEED SOURCE STUDY PLANTATIONS DURING THE FIRST FIVE YEARS. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 12-17.
Two pests have been of major importance. Tipmoth injury is severe in most shortleaf and loblolly plantations, irrespective of seed source, and is impeding height growth. Intensity of fusiform rust is variable among the slash and loblolly plantations. Its incidence consistently differs between seed sources in loblolly plantings, but in only one case with slash pine.

* ———— and BERCAW, T. E.
1956. SHORTLEAF-LOBLOLLY HYBRID PINES FREE OF FUSIFORM RUST AFTER 5 YEARS' EXPOSURE. Jour. Forestry 54: 779.
Five years after planting, none of the 31 surviving hybrid seedlings had rust symptoms, while 67 percent of some adjacent slash pine seedlings had typical cankers.

———— and COYNE, J. F.
1955. OCCURRENCE OF PESTS IN SOUTHWIDE PINE SEED SOURCE STUDY. Third South. Forest Tree Impr. Conf. Proc. 1955: 49-54.
Occurrence of fusiform rust, tip moth, and webworm by geographic sources of loblolly and slash pine in two-year-old plantations.

* ———— DORMAN, K. W., and WAKELEY, P. C.
1961. FOREST GENETICS PUBLICATIONS BY THE SOUTHEASTERN AND SOUTHERN FOREST EXPERIMENT STATIONS THROUGH 1961. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 192, 27 pp.
Annotated bibliography.

* ———— and HEPTING, G. H.
1957. PEST OCCURRENCES IN 35 OF THE SOUTHWIDE PINE SEED SOURCE STUDY PLANTATIONS DURING THE FIRST THREE YEARS. U. S. Forest Serv. South. Forest Expt. Sta., 7 pp., illus.
Drouth has caused most of the mortality so far. Fusiform rust is building up rapidly. The Nantucket tip moth is widespread in loblolly and shortleaf plantings, and may be retarding height growth appreciably. Brown-spot needle disease is being controlled in longleaf plantations with fungicides, but it and Hypoderma needle blight may be causing growth loss on loblolly. No other pests yet appear serious.

* HESSELTINE, C. W., and SNYDER, E. B.
1958. ATTEMPTS TO FREEZE-DRY PINE POLLEN FOR PROLONGED STORAGE. Torrey Bot. Club Bul. 85(2): 134-135.
Lyophilization techniques by which fungus spores have been stored successfully for 15 years failed with pine pollen.

JEWELL, F. F.

1957. INOCULATION TECHNIQUES IN STUDIES OF RUST RESISTANCE. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 67-69.
Exploratory studies at the Southern Institute of Forest Genetics give promise that a technique can be developed for testing for rust resistance in the southern pines.

* ———

1957. PREVENTING CONE RUST ON SLASH PINE BY POLLINATION TECHNIQUES USED IN BREEDING PROGRAMS. Phytopath. 47: 241-242, illus.
Rust infection of first-year cones of slash pine was prevented by routine bagging of the conelets for controlled pollination; 27 percent of the nonbagged cones became infected. Infection of slash pine cones seems to coincide with the period of pollination.

* ———

1958. SOFTENING SLASH PINE TISSUES FOR SERIAL SECTIONING. Stain Technol. 33(4): 191-192.
A 10-percent aqueous solution of glycerol was found best for softening serial paraffin sections for anatomical studies of slash pine infected with fusiform rust.

* ———

1958. STAIN TECHNIQUE FOR RAPID DIAGNOSIS OF RUST IN SOUTHERN PINES. Forest Sci. 4: 42-44, illus.
Two techniques, involving orseillin-BB and aniline blue, and safranin-O and aniline blue, have been used successfully for distinguishing the mycelium of Cronartium fusiforme *in hand sections of slash and loblolly pines and of* C. cerebrum *in shortleaf pine.*

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1959. DISEASE RESISTANCE STUDIES IN TREE IMPROVEMENT RESEARCH. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 18-20.
"The ultimate aim of disease resistance research is to be able to incorporate the factors for resistance . . . into trees possessing other superior traits as well."

* ———

1961. ARTIFICIAL TESTING OF INTRA- AND INTERSPECIES SOUTHERN PINE HYBRIDS FOR RUST RESISTANCE. South. Forest Tree Impr. Conf. Proc. 6: 105-109.
Crossing slash or loblolly with shortleaf will not consistently yield resistant progenies. Resistance in shortleaf hybrids appears more complicated than inheritance of a simple dominant factor.

* ———

1961. INFECTION OF ARTIFICIALLY INOCULATED SHORTLEAF PINE HYBRIDS WITH FUSIFORM RUST. U. S. Dept. Agr. Plant Dis. Rptr. 45: 639-640, illus.
Characteristic rust galls developed on at least a few progenies from each of five crosses of shortleaf × slash pine and one cross of shortleaf × loblolly pine. Differences in the number of galled individuals from the various crosses appeared traceable to particular shortleaf parents.

——— and HENRY, B. W.

1959. BREEDING FOR RESISTANCE TO SOUTHERN FUSIFORM RUST. (Abstract.) IX Internatl. Bot. Cong. Proc., pp. 181-182.
See next entry.

* ——— and HENRY, B. W.

1961. BREEDING FOR RESISTANCE TO SOUTHERN FUSIFORM RUST. *In* Recent Advances in Botany, pp. 1694-1695. Toronto, Ontario.
Text of a paper read at International Botanical Congress in 1959. Data supported the initial hypotheses on possible sources of resistance, i. e., natural resistance in susceptible pine species and inherited resistance in hybrid progenies having shortleaf as a parent. At that time resistance of shortleaf appeared to be transmitted as a dominant factor to the F_1 hybrids from crosses of shortleaf × slash and shortleaf × loblolly.

MCGREGOR, W.H.D., ALLEN, R. M., and KRAMER, P. J.

1961. THE EFFECT OF PHOTOPERIOD ON GROWTH, PHOTOSYNTHESIS, AND RESPIRATION OF LOBLOLLY PINE SEEDLINGS FROM TWO GEOGRAPHIC SOURCES. Forest Sci. 7: 342-348, illus.
Florida seedlings grew taller than Georgia seedlings under long days (15 hours). Georgia seedlings photosynthesized faster than Florida seedlings because of a greater amount of foliage rather than a faster rate per unit of fascicle length.

* MCKNIGHT, J. S., and BONNER, F. T.

1961. POTENTIALS AND PROBLEMS OF HARDWOOD TREE IMPROVEMENT. South. Forest Tree Impr. Conf. Proc. 6: 164-178.
Literature references and tables of information useful in tree-improvement programs for southern hardwoods.

* MCLEMORE, B. F., CROW, A. B., and WAKELEY, P. C.

1961. DRY-MATTER CONTENT OF LOBLOLLY PINE NEEDLES APPEARS UNRELATED TO GEOGRAPHIC SEED SOURCE. Forest Sci. 7: 373-375.
Samples from 25 sources representing extremes in the species' range showed no relation between dry-matter content and latitude, longitude, or climate.

* MAISENHELDER, L. C.

1961. SELECTION OF POPULUS CLONES FOR SOUTHERN BOTTOM LANDS. South. Forest Tree Impr. Conf. Proc. 6: 110-115.
Five clones of native cottonwood and one Euramerican hybrid have thus far emerged as the best Populus planting stock. Some other hybrids grow more slowly than cottonwood but have attributes worth perpetuating.

* MITCHELL, H. L., and WHEELER, P. R.

1959. THE SEARCH FOR WOOD QUALITY. Two parts. Forest Farmer 18(4): 4-6, illus.; 18(5): 10-12, illus. *Also as* WOOD QUALITY OF MISSISSIPPI'S PINE RESOURCES. U. S. Forest Serv. Forest Prod. Lab. Rpt. 2143, 20 pp., illus.
Highlights of wood-density research in southern pines, carried on in connection with the third Forest Survey of Mississippi.

——— and WHEELER, P. R.

1960. SPECIFIC GRAVITY—A MEASURE OF INTRINSIC WOOD QUALITY. Soc. Amer. Foresters Proc. 1959: 53-57, illus.
Relationships of specific gravity to age of wood, species, and latitude and longitude of the growing site were investigated by extensive sampling of the major southern pine species in Mississippi.

* NAMKOONG, GENE.

1960. FEMALE FLOWERS ON ONE-YEAR-OLD PITCH PINE. Forest Sci. 6: 163, illus
New degree of flowering precocity for pines.

* NEELANDS, R. W., and JEWELL, F. F.

1961. THE SEARCH FOR PEST-RESISTANT TREES. Forest Farmer 21(1): 15, 26, 28, illus.
Work on fusiform-rust resistance at the Southern Institute of forest Genetics exemplifies the possibilities of breeding for pest resistance.

PUTNAM, J. A.

1955. POSSIBILITIES OF GENETICS RESEARCH IN SOUTHERN HARDWOODS. Third South. Forest Tree Impr. Conf. Proc. 1955: 44-47.
A little work has been done on artificial regeneration and on genetic selection of cottonwood, but virtually none on other valuable hardwood species.

* RUSSELL, T. E.

1960. WHY GAMBLE ON PINE SEED? Forests and People 10(3): 35, 42, 46-47, illus.

" . . . Steps must be taken to improve the quality of Louisiana's pine seed, and to put seed procurement on the same high level as other forest practices."

SCHOENIKE, R. E.

1956. PLASTIC TUBES FOR CONTROLLED POLLINATION OF PINE. Jour. Forestry 54: 135, illus.
Small plastic tubes can be used in pine tree breeding.

SNYDER, E. B.

1957. POLLEN HANDLING. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 111-115.
Means of hastening the shedding of pollen, and of extracting and storing pollen.

* ———— (Editor)

1959. GLOSSARY FOR FOREST TREE IMPROVEMENT WORKERS. U. S. Forest Serv. South. Forest Expt. Sta. for Soc. Amer. Foresters, 22 pp.
Simplified definitions of about 160 terms.

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1960. A FOREST-GENETICS LITERATURE CLASSIFICATION BASED ON THE OXFORD DECIMAL CLASSIFICATION (ODC). Silvae Genetica 9: 167-168.
Authorized expansion of pertinent headings of the ODC. Harmonizes with the classification used in Forestry Abstracts.

* ————

1961. EXTRACTING, PROCESSING, AND STORING SOUTHERN PINE POLLEN. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 191, 14 pp., illus.
Recommends extracting pollen from ripe strobili in dry, warm, moving air and storing it at 22 percent relative humidity and 32° F.

* ————

1961. MEASURING BRANCH CHARACTERS OF LONGLEAF PINES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 184, 4 pp., illus.
From measurements of all mature branches on 48 longleaf trees it was deduced that the best place to determine inherent branch angles and diameters was a "zone of equilibrium" in the middle crown where diameters of successive branches down the bole increased in proportion to bole diameter.

* ————

1961. RACIAL VARIATION IN ROOT FORM OF LONGLEAF PINE SEEDLINGS. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 53-59, 64a.
Roots of 1-year-old longleaf pines from seed sources in southeastern Georgia are more fibrous than those of seedlings representing sources in Alabama, Mississippi, and Louisiana.

* ———— GRIGSBY, H. C., and HIDALGO, J. U.

1961. X-RADIATION OF SOUTHERN PINE SEED AT VARIOUS MOISTURE CONTENTS. Silvae Genetica 10: 125-131, illus.
Zero to 1,800 r were applied to determine mortality and growth depression at dosages strong enough to yield mutations. Stratification prior to irradiation produced more severe damage than other methods of moistening the seed. Filtering the rays intensified effects noted for unfiltered rays. One-year-old shortleaf seedlings from seed receiving 300 to 400 r were heavier than controls but cone production at 7 years was not stimulated.

* ———— and ROSSOLL, HARRY.

1958. CLIMBING SOUTHERN PINES SAFELY. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 159, 17 pp., illus.
Illustrated guide to safe climbing with sectional ladders.

———— and ROSSOLL, HARRY.

1959. CLIMBING TREES IS DANGEROUS! Forests and People 9(1): 13-14, illus. *Also in* Forest World, pp. 13-15. June 1962.
See preceding entry.

THIRD SOUTHERN CONFERENCE ON FOREST TREE IMPROVEMENT.

1955. PROCEEDINGS. Compiled and processed by the South. Forest Expt. Sta., 132 pp., illus.
Texts of papers read at the Conference, which was held in New Orleans, Louisiana, on January 5 and 6, 1955.

WAHLGREN, H. E., and FASSNACHT, D. L.

1959. ESTIMATING TREE SPECIFIC GRAVITY FROM A SINGLE INCREMENT CORE. U. S. Dept. Agr. Forest Prod. Lab. Rpt. 2146, 24 pp., illus.
Describes method of estimating average specific gravity of the merchantable volume in a southern yellow pine tree from a single increment core.

WAKELEY, P. C.

1955. SET-BACKS AND ADVANCES IN THE SOUTHWIDE PINE SEED SOURCE STUDY. Third South. Forest Tree Impr. Conf. Proc. 1955: 10-13.
Notes on racial variations in the nursery and early plantation phases. Losses to drought in western part of study territory necessitate additional longleaf and shortleaf pine plantations.

* ————

1957. FOREST TREE-IMPROVEMENT WORK IN THE SOUTH. South. Lumberman 195(2441): 126-129, illus.
Summary of work being done by educational institutions, Federal agencies, State departments of forestry, industrial organizations, and the Committee on Southern Forest Tree Improvement.

————

1958. SUMMARY OF FOREST TREE IMPROVEMENT WORK IN THE SOUTH. *In* Lake States Forest Tree Impr. Conf. Proc. 3: 65-71. U. S. Forest Serv. Lake States Forest Expt. Sta. Sta. Paper 58.
See preceding entry.

* ————

1959. FIVE-YEAR RESULTS OF THE SOUTHWIDE PINE SEED SOURCE STUDY. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 5-11.
Preliminary analyses have shown statistically significant variations, attributable to seed source, in the survival and average height of all four major southern pines, and in the rust-susceptibility of loblolly pine.

* ————

1961. RESULTS OF THE SOUTHWIDE PINE SEED SOURCE STUDY THROUGH 1960-61. Sixth South. Forest Tree Impr. Conf. Proc. 1961: 10-24, illus.
Significant variations in survival and height appear among different geographic sources of both loblolly and shortleaf pine, especially from north to south. In longleaf they appear almost as much from east to west as from north to south. Loblolly varies significantly in fusiform rust infection, especially from east to west. Compared to these species, slash pine north and west of mid-Florida exhibits little racial variation.

* ———— ZOBEL, B. J., GODDARD, R. E., ROBINSON, H. F., SNYDER, E. B., EVANS, T. C., and FREESE, FRANK.

1960. MINIMUM STANDARDS FOR PROGENY-TESTING SOUTHERN FOREST TREES FOR SEED-CERTIFICATION PURPOSES. U. S. Forest Serv. South. Forest Expt. Sta. for the Com. on South. Forest Tree Impr., 19 pp.
Twenty-one standards with explanatory text, specifying the plant material, experimental design, field techniques, records, statistical analyses, and reporting proposed by a special Subcommittee of the Committee on Southern Forest Tree Improvement as the minimum basis for certifying genetic improvement of forest tree seed.

Wheeler, P. R., and Mitchell, H. L.
1959. specific gravity variation in mississippi pines. Fifth South. Forest Tree Impr. Conf. Proc. 1959: 87-96, illus. *Also as* U. S. Forest Serv. Forest Prod. Lab. Rpt. 2250, 10 pp., illus. 1962.
Of the single variables tested to predict core specific gravity, the most important was the reciprocal of age. The four southern pines showed true variation in core specific gravity according to geographic location.

Zahner, Robert.
1956. genetically similar seedlings for physiology experiments. Jour. Forestry 54: 190.
Seedlings of different ancestry may respond differently to treatment.

ECONOMICS

FOREST SURVEY

Alabama

Judson, G. M.
1956. alabama's forests. Ala. Forest Prod. Dir., 1956 ed., pp. 21, 24.
Findings of second Forest Survey, in brief.

Muntz, H. H.
1955. birmingham area forests surveyed. Ala. Lumberman 7(4): 10, 23-25, illus.
Summary of Forest Survey findings in Birmingham area, and recommendations for improving the forest.

* Sternitzke, H. S.
1961. alabama has millions of tons of resinous stumpwood available. Naval Stores Rev. 71(8): 10-11, illus. *Also in* Ala. Forest Prod. Dir. 5(10): 107. 1962.
At the current rate of removal there is at least 10 years' supply in the five main producing counties.

Arkansas

* Reynolds, R. R., and Sternitzke, H. S.
1961. timber stand improvement opportunities in southwest arkansas. South. Lumberman 203(2530): 28, 30-31, illus.
Of the pine acreage, 23 percent is inadequately stocked but has an adequate seed source; 27 percent has neither adequate stocking nor adequate seed source.

* Sternitzke, H. S.
1956. timber supplies for industry in arkansas. U. S. Dept. Agr. Forest Resource Rpt. 11, 32 pp., illus.
Analysis of Arkansas' present forest resource, and of changes since the survey of 1934-36.

———
1959. forest resources in southwest arkansas. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 121.
Forest acreage in southwest Arkansas has increased 10 percent since 1949, and pine growing stock is up 30 percent. Hardwood growing stock has declined 10 percent.

* ———
1959. forest resources in the ouachitas. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 124.
Softwood sawtimber volume in the Ouachita Mountain region of Arkansas has increased 44 percent since 1951, hardwood sawtimber volume has declined 37 percent. Total softwood growing stock has risen 39 percent.

* ———
1960. arkansas forests. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 84, 58 pp., illus.
Softwood growing stock in the State has increased 31 percent since 1951. Hardwood has declined 9 percent. Forest acreage totals 20.8 million: up 7 percent.

* ———
1960. arkansas forests revisited. South. Lumberman 201 (2513): 131-133, illus.
See preceding entry.

* ———
1960. arkansas forest survey completed. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 130.
See second entry above.

Louisiana

* Cassady, J. T., and Wheeler, P. R.
1956. louisiana needs more planted forests. Forests and People 6(1): 18-21, illus.
The Forest Survey found that 2.8 million acres of potential pine land in Louisiana must be planted if they are to be restored to early productivity. Another 3 million acres lack adequate stocking, but have enough residual pines to regenerate. The remaining 3.2 million acres of pine land are adequately stocked and highly productive.

* Siegel, W. C.
1960. forest landownership in louisiana. Ed. 4, La. Forestry Comn. Bul. 5, 116 pp.
Forest landownerships of 500 acres or more are listed by parish, with the owner's name and address. Tracts of less than 500 acres are counted but not listed.

Southern Forest Experiment Station.
1955. forests of louisiana, 1953-54. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 75, 64 pp., illus.
Complete, final statistics from the Forest Survey.

Sternitzke, H. S.
1955. cypress is coming back. Forests and People 5(4): 40-41, illus. *Also in* South. Lumberman 191(2393): 113.
Louisiana has more cypress than it did 20 years ago. The volume in large trees has decreased, but that in small trees has risen.

———
1955. louisiana's stumpwood supply. Naval Stores Rev. 65(3): 11, 20, illus.
Louisiana has about 5.1 million tons of longleaf pine stumpwood, enough to last 10 or 15 years at the present rate of removal.

* ———
1955. louisiana's timber supply, 1953-54. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 96.
See third entry above.

——— and Wheeler, P. R.
1955. louisiana forests turn the corner. Forests and People 5(2): 8-19, illus.
Popular account of the information in Forest Survey Release 75. See fourth entry above.

WHEELER, P. R., and CASSADY, J. T.
1956. THE HARDWOOD CONTROL JOB ON LOUISIANA'S PINELANDS. Forests and People 6(2): 22-23, 45, illus.
Two out of every 3 acres of Louisiana's uplands are encumbered with low-value hardwoods.

Mississippi

* SOUTHERN FOREST EXPERIMENT STATION.
1958. KEMPER COUNTY CAN GROW TIMBER. 4 pp., illus.
NESHOBA COUNTY CAN GROW TIMBER. 4 pp., illus.
NOXUBEE COUNTY CAN GROW TIMBER. 4 pp., illus.
WINSTON COUNTY CAN GROW TIMBER. 4 pp., illus.
Popular booklets summarizing basic measures to realize full potential of the forests in four counties of east-central Mississippi. See third entry below.

* _____
1958. MISSISSIPPI FORESTS. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 81, 52 pp., illus.
Complete report on new Forest Survey of Mississippi.

* STERNITZKE, H. S.
1958. MISSISSIPPI SURVEY COMPLETED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 116.
See entry above.

* _____
1959. FOREST DEVELOPMENT OPPORTUNITIES IN NORTH CENTRAL MISSISSIPPI. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 173, 40 pp., illus.
How development of the forests could strengthen the economy of Kemper, Neshoba, Noxubee, and Winston Counties. The conclusions and recommendations may also be applicable in neighboring counties that share similar timberland problems and opportunities.

_____
1959. MISSISSIPPI'S STUMPWOOD SUPPLY. Naval Stores Rev. 68(12): 12-13, illus.
The total supply is 4,500,000 tons. Average rate of removal is 300,000 tons annually. Four wood naval stores plants are still active in the State.

Oklahoma

* SOUTHERN FOREST EXPERIMENT STATION.
1957. FORESTS OF EAST OKLAHOMA, 1955-56. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 79, 34 pp., illus.
Forest Survey statistics for the main belt of commercial timber in the State.

* STERNITZKE, H. S.
1957. EAST OKLAHOMA SURVEY COMPLETED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 109.
See entry above.

Tennessee

* STERNITZKE, H. S.
1955. TENNESSEE'S TIMBER ECONOMY. U. S. Dept. Agr. Forest Resource Rpt. 9, 56 pp., illus.
Analysis and statistics.

* _____
1961. TENNESSEE FOREST ACREAGE INCREASING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 136. *Also as* MORE TIMBER IN TENNESSEE. South. Lumberman 204 (2539): 51. 1962.
In the past decade, Tennessee's commercial forest acreage has increased 9 percent, largely by reversion of former agricultural land. It now stands at 13,432,400.

Texas

* SOUTHERN FOREST EXPERIMENT STATION.
1956. FORESTS OF EAST TEXAS, 1953-55. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 77, 51 pp., illus.
Complete statistics.

* STERNITZKE, H. S.
1956. FOREST RESOURCES OF EAST TEXAS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 104.
See preceding entry.

_____
1956. STUMPWOOD SUPPLIES IN SOUTHEAST TEXAS. Naval Stores Rev. 66(6): 8, illus.
Of the total supply of 2.5 million tons about 1 million tons is presently available by push-dozer operation. Around a quarter of a million tons is being removed annually.

WHEELER, P. R.
1956. PRELIMINARY RESULTS OF THE FOREST SURVEY OF EAST TEXAS 1953-1955. Tex. Forest News 35(2): 4-5, illus.
"Southeast Texas is still growing trees and producing wood products at a good rate, and is in a fair position to continue . . . . In northeast Texas the best thought and effort of both public and private agencies will be required to assure the continued productivity of the forests."

Regional

* CHRISTOPHER, J. F.
1955. RISE IN PULPWOOD CUT CONTINUES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 97.
See Stover and Christopher, 1955.

* _____
1956. PULPWOOD UPSURGE CONTINUES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 104.
See Cruikshank and McCormack, 1956.

* _____
1957. MIDSOUTH CHARCOAL PRODUCTION. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 108.
By the end of 1956, 29 charcoal plants were operating.

* _____
1957. SOUTHERN PULPWOOD HARVEST SOARS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 110.
See Christopher and Nelson, 1957.

* _____
1958. SOUTHERN PULPING CAPACITY EXPANDS DESPITE PRODUCTION DROP. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 117.
See McCormack, 1958.

_____
1959. SOUTH'S PULP INDUSTRY STILL GROWING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 122.
See Christopher and Nelson, 1959.

* _____
1960. 1959 SETS RECORD FOR SOUTHERN PULPWOOD. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 129.
See Todd and Nichols, 1960.

* _____
1961. BIGGEST SOUTHERN PULPWOOD HARVEST. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 133.
See Christopher and Nelson, 1961.

* _____
1961. SOUTHERN WOOD INDUSTRIES ARE IN THE CHIPS. South. Lumberman 203(2527): 25, illus.
About 900 southern wood-using plants are currently making pulp chips from plant residues. The volume in 1960 was 2.9 million cords, worth $40 million.

* Christopher, J. F., and Nelson, Martha E.
1957. 1956 pulpwood production in the south. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 80, 17 pp., illus.
Total cut of roundwood was 19,685,800 cords, of which 14 percent was hardwood. Residues from wood-using industries added another 659,100 cords.

* ———— and Nelson, Martha E.
1959. southern pulpwood production, 1958. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 82, 24 pp., illus.
Reports total 1958 pulpwood harvest of 20,232,800 cords, of which 2,944,600 cords was hardwood and 1,785,400 was chipped residues. Reviews developments in southern pulpwood production and mill capacity since 1946.

* ———— and Nelson, Martha E.
1961. southern pulpwood production, 1960. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 85, 29 pp., illus.
Volume of bolts was 20,595,500 cords, of which 80 percent was pine. Another 2,877,300 cords was in the form of chipped residues.

* Cruikshank, J. W., and McCormack, J. F.
1956. 1955 pulpwood production in the south. U. S. Forest Serv. Southeast. Forest Expt. Sta. Forest Survey Release 47, 32 pp., illus.
The total was 18,014,600 cords, an increase of 10.7 percent over 1954. Pine production was up 9.8 percent, hardwood up 17.5 percent.

* Janssen, P. L., and Weiland, M. R.
1960. softwood distribution maps for the south. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 83, 12 pp., illus.
Relative concentration and approximate range of 11 softwood species.

* McCormack, J. F.
1958. 1957 pulpwood production in the south. U. S. Forest Serv. Southeast. Forest Expt. Sta. Forest Survey Release 53, 17 pp., illus.
The total was 19,783,000 cords. Of this, hardwood comprised 2,866,000 cords and chipped mill residues 1,200,000 cords.

* Neelands, R. W., and Judson, G. M.
1958. arkansas airlift. Forests and People 8(4): 30-31, 38-39, illus.
A Bell 47G helicopter was used to transport Forest Survey cruising teams to difficult plots in the Delta region of Arkansas. At present costs, the helicopter appears economical only in large forested areas that have natural openings for landing points, but are otherwise extremely difficult of access.

* Sternitzke, H. S., and Christopher, J. F.
1961. recent trends in southern pine production. Pulpwood Prod. 9(11): 1, 4, illus.
Total output has been relatively stable since 1950 because a rise in production of pulpwood offset a decline in sawlogs. In terms of annual output, pulpwood has been dominating the South's pine timber economy since 1957.

* ———— and Putnam, J. A.
1956. forests of the mississippi delta. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 78, 42 pp., illus.
Forest land and timber volume, cut, and growth in the Delta portion of Arkansas, Louisiana, and Mississippi.

Stover, W. S., and Christopher, J. F.
1955. 1954 pulpwood production in the south. U. S. Forest Serv. South. Forest Expt. Sta. Forest Survey Release 76, 15 pp., illus.
In 1954, pulpwood production in the South was 16,269,600 cords, the largest harvest on record. The volume of hardwood pulpwood, 2,128,800 cords was 11 percent more than in 1953; pine production was very slightly less than in 1953.

* Todd, A. S., Jr., and Nichols, Agnes C.
1960. 1959 pulpwood production in the south. U. S. Forest Serv. Southeast. Forest Expt. Sta. Forest Survey Release 56, 23 pp., illus.
Southern pulpwood harvest by State and county, size and location of mills, number of companies drawing wood from individual counties.

Wheeler, P. R.
1955. forest resource changes found in alabama, arkansas, louisiana, and mississippi. The Unit, News Letter 56, pp. 44-52, illus. *Also in* South. Pulp and Paper Mfr. 18(3): 86, 88, 90.
Trends in timber inventory.

* ————
1958. the bottomland hardwood forest resource. La. State Univ. Seventh Ann. Forestry Symposium Proc. 1958: 1-4.
Southern bottom-land hardwood types cover almost 37 million acres. This area supports 94 billion board feet, of which a little less than half is in trees 18 inches in d.b.h. and larger. The total acreage remains fairly stable, but the acreage in the bottoms of the Mississippi is shrinking. The average stand contains 2,500 board feet per acre and grows at the rate of 5 or 6 percent.

————
1960. southern forest regions. Forest Farmer (Eighth Manual ed.) 19(7): 28-31, illus. *Also in* (Ninth Manual ed.) 20(7): 24-27, illus. 1961. *Also in* (Tenth Manual ed.) 21(7): 22-24, illus. 1962.
Acreages and characteristics of major types.

* ————
1961. data and services available from the forest survey and plans for the future. Amer. Pulpwood Assoc. Tech. Paper 61-P-4, 9 pp., illus.
Current procedures of the Forest Survey, as conducted by the Southern Forest Experiment Station.

* ————
1961. south destined to become nation's wood basket. Forest Farmer 20(13): 6-7, 18, illus.
The South may soon have to furnish more than half the wood needed by a vastly increased U. S. population. She has the forest soils, acreage, and species, but land managers will have to redouble their efforts and processors improve utilization techniques.

* ————
1961. southern wood supplies—today and tomorrow. The Unit, News Letter 90, pp. 9-11, illus.
The gradual disappearance of the West's old-growth timber will increase the demand on the second-growth southern pine forests.

———— and Cruikshank, J. W.
1956. the south's forest resource. Jour. Forestry 54: 629-632, illus.
Area and ownership, major forest types, condition of the forest, sawtimber and cordwood volumes, growth versus cut.

* ———— and Sternitzke, H. S.
1956. timber trends in the mid-south. South. Lumberman 193(2417): 179-181, illus.
Changes in the forest resource, as revealed by comparing findings of the recently completed Second Forest Survey with those of the First Survey of the 1930's.

* Wilson, R. C., and Christopher, J. F.
1958. there's an adequate supply of wood utility poles. Telephony 155(4): 28-30, 56-57, illus. *Also in* Wood Preserv. News 36(11): 10-12, illus.
There are at least 1.12 billion softwood trees clearly suitable for poles growing on commercial forest lands in the continental United States. Southern pines have dominated the pole market for many years and furnish about 75 percent of the total national production.

TAXATION

* Siegel, W. C., and Perry, J. D.
1961. forest taxation in louisiana. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 187, 14 pp., illus.
Statistical summary of a study to determine trends during the past two decades and trace preliminary effects of a yield-tax law enacted in 1954.

PRODUCTION AND MARKETING

* Barraclough, S. L., and Pleasonton, Alfred.
1957. data for planning woodland opportunities on west tennessee farms. Tenn. Agr. Expt. Sta. Bul. 276, 64 pp., illus.
Labor requirements, timber yields expected under two levels of management, and procedures for fitting forestry into improved farming systems.

* Christopher, J. F.
1960. pulpwood price trends in the mid-south. Pulpwood Prod. 8(8): 28, illus.
Though production increased in 1959 prices remained the same as in 1958. Open-market prices for chipped mill residues averaged $6.21 per ton for pine and $4.97 for hardwood.

* ———
1961. 1960 pulpwood prices in the mid-south. South. Pulp and Paper Mfr. 24(7): 46, illus.
Prices for pine bolts increased from $15.28 per cord in 1957 to $16.07 in 1960. Hardwood prices have been relatively stable. Open-market prices of chipped mill residues have been fairly constant during the past 4 years, averaging $6.22 per ton for pine and $4.48 for hardwood. Contractors continue to truck increasing proportions of their roundwood to mechanized woodyards and to millyards.

* Duerr, W. A., Fedkiw, John, and Guttenberg, Sam.
1956. financial maturity: a guide to profitable timber growing. U. S. Dept. Agr. Tech. Bul. 1146, 74 pp., illus.
A tree is financially mature when its expected value increase no longer equals or exceeds the net return possible—the so-called alternative rate of return—from liquidating the tree, using its cash value elsewhere, and turning the growing space over to other trees. Mathematical appendix compares the concept of financial maturity with that of soil rent.

* Gibbs, C. B., and Stephenson, G. K.
1958. profits and problems in east texas woodland conservation. Tex. Jour. Sci. 10: 302-307.
Few small forest owners in east Texas as yet manage their timber well. "We feel that the classic excuses, ignorance of basic principles of forestry or lack of market information, are no longer of primary importance . . . . Much more important, apparently, is the poor competitive position of the seller of a small amount of stumpage, and the fact that most small owners have urgent and recurring needs for cash." Restoration of the most depleted small forests is unlikely without public financial assistance.

* Guttenberg, Sam.
1956. influence of timber characteristics upon stumpage prices. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 146, 14 pp., illus.
A study of pine sawtimber sales from National Forests in Mississippi, Louisiana, and Texas showed that stumpage prices tend to increase with total volume offered, cut per acre, and grade of the trees; prices decrease in proportion to the low-grade hardwood tied into the sales. The study suggests the possibility of a price-reporting service that would permit appraisal of specific parcels of timber by comparison, in terms of the main value determinants, with the going market.

* ———
1956. pine prices mirror timber differences. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 102.
See preceding entry.

* ———
1957. reducing manpower for pulpwooding. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 111.
See Guttenberg and Perry, 1957.

———
1957. stumpage price reports as a stimulus to timber growing. Soc. Amer. Foresters Proc. 1956: 132-133.
The uses to which stumpage price reports lend themselves, and the need for responsibility on the part of price reporters. If they are to serve buyers and sellers equally, reports should be neutral and objective.

* ———
1957. the midsouth's multiplying pulpwood dollars. South. Pulp and Paper Mfr. 20(9): 44, illus.
Summarizes annual prices for delivered pulpwood, 1937-1956. During 1956, the pulpwood industry in the Midsouth paid out $140,000,000 for pulpwood, as against $5,000,000 in 1937.

* ———
1958. chips bolster midsouth pulpwood cut in 1957. South. Pulp and Paper Mfr. 21(10-A): 28, 30, illus. *Also in* Timberman 60(6): 69. 1959.
Charts production of chipped sawmill residues from a start in 1953 to ¾ million cords in 1957. The average 1957 price per ton of green chips was $6.19 for pine and $4.31 for hardwood. Prices for rough bolts are listed also.

———
1958. the economics of type conversion. Gulf States Sect. Soc. Amer. Foresters Proc. 1958: 9-14.
Outlines a method by which the returns from regenerating difficult areas may be compared with other investment opportunities in and out of the forest enterprise. When properly evaluated, seemingly high conversion costs often prove justifiable.

* ———
1960. guidelines for the forest investor. Forest Farmer 19(8): 6-7, illus. *Also in* Forest Farmer (Eighth Manual ed.) 19(7): 47-48, illus. *Also in* (Ninth Manual ed.) 20(7): 89-90, illus. 1961.
Rates of return from investments in planting loblolly pine, under various assumptions as to site and stumpage prices.

———
1961. what, where, and when to sell trees. Prog. Farmer (Tex.-Okla. ed.) 76(5): 30, illus.
Brief hints for owners of small woodlands.

* ———
1961. who's going to use all this wood? *In* Advances in Management of Southern Pine. La. State Univ. Tenth Ann. Forestry Symposium Proc. 1961: 105-112, illus.
"As our economy limps into the 60's, some disheartened foresters are conjuring up visions of excessive wood supplies. Are they right? I hope to provide a basis for drawing your own conclusions."

* Guttenberg, Sam, and Christopher, J. F.
1959. midsouth pulpwood cut rises in 1958. South. Pulp and Paper Mfr. 22(8): 58, illus.
Though the Midsouth's 1958 pulpwood harvest set a record, prices for pine bolts were about the same as in 1957, while hardwood bolt prices eased somewhat. Chipped mill residues averaged $6.22 per ton for pine and $4.10 for hardwood.

——— and Perry, J. D.
1957. pulpwooding with less manpower. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 154, 34 pp., illus.
Labor requirements of several systems of pulpwooding in various timber types of Arkansas and Mississippi.

* ——— and Perry, J. D.
1959. timber buyers of the yazoo-little tallahatchie watershed of mississippi. South. Forest Expt. Sta., 26 pp., illus.
Directory of 273 timber-buying firms that are active in this 19-county area of north-central Mississippi.

* ——— and Row, Clark.
1961. markets, timber quality influence southern pine stumpage prices. Timberman 62(10): 66-67, 69, illus.
The wholesale lumber market and the quality of the trees largely determine prices bid for pine sawtimber from national forests in Texas, Louisiana, and Mississippi.

* McDermid, R. W., Kitt, P. D., and Guttenberg, Sam.
1959. ownership factors affecting management of small woodlands in st. helena parish, louisiana. La. Agr. Expt. Sta. and La. State Univ. and Agr. and Mech. Col. Bul. 520, 19 pp., illus.
Landowners who undertake management programs do so on tracts of above-average size and stocking and appear to have more financial resources than the nonmanagers. Many nonmanagers either were unacquainted with the potentialities of forestry, or thought they had a superior use for their forest land.

Mignery, A. L.
1956. factors affecting small-woodland management in nacogdoches county, texas. Jour. Forestry 54: 102-105.
The relatively few landowners who have undertaken timber management did so on properties that were reasonably well stocked. They had income from other sources and therefore were not pressed to cut immature growing stock. Even so, they did not undertake timber management until professional foresters encouraged them.

* Perry, J. D.
1958. marketing—an avenue to revenue from farm forests. U. S. Forest Serv. South. Forest Expt. Sta., 5 pp.
Owners of farm forests can benefit greatly from professional help in marketing wood to best advantage. Products research is of great benefit also, through its indirect effect of improving the general market situation.

* ——— and Guttenberg, Sam.
1959. southwest arkansas' small woodland owners. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 170, 14 pp., illus.
Active managers, while comprising less than 10 percent of the owners, hold one-third of the forested acreage. Those who tend to invest in forestry have above-average assets. Instead of contributing their own time, they typically hire labor for forest operations. Planting open areas to pine and removing undesirable trees are the most popular practices.

* Pleasonton, Alfred.
1957. upland hardwood management appeals to west tennesseans. South. Lumberman 195(2441): 108-110, illus.
Of 40 landowners in Hardeman County, 29 are actively interested in managing their hardwoods conservatively—a tribute to years of effort by public and industrial foresters. A few have well-developed programs, but most will need considerable technical advice to advance beyond the elementary stage they have already reached.

* ———
1958. planning farm-and-forest management. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 116.
Synopsis of the bulletin by Barraclough and Pleasonton, listed above.

* ——— and Guttenberg, Sam.
1961. stimulating woodland management in north mississippi: an appraisal. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 185, 18 pp., illus.
The eroded Yazoo-Little Tallahatchie watershed of Mississippi is the setting for the largest land-rehabilitation project in the Nation. The program has encouraged landowners to improve their woodlands. Those with above-average assets responded best, but low-income owners also participated.

* Row, Clark.
1960. south's markets help southern pine. South. Lumberman 201 (2503): 26-27, illus.
Recent distribution patterns indicate that the increasing home market for southern pine lumber has offset a continuing decline of shipments to historic markets in the North. In both local and long-distance shipments the preference is for trucks over railroads. Douglas-fir shipments into the South have been stabilized for several years.

* ———
1961. seasons set pace for activity in the lumber business. Lumberman 88(1): 26-28, illus.
Lumber production, distribution, and use have different but interrelated yearly cycles. Brisk during warm months and slack in winter, residential construction determines trends in retail sales and orders received by sawmills. Though production also is affected by weather, it is often out of phase with shipments, thus causing fluctuations in inventory and price. In winter, sales are typically low and inventories rise; from April through summer, shipments exceed production, so that mill inventories are at their lowest by October. Temperate southern weather makes output and use of southern pine more uniform than that of western pine or Douglas-fir.

* ———
1961. will southern pine exports revive? South. Lumberman 203(2537): 109-111, illus.
Exports now are a small fraction of those in the days of old-growth timber, but increasing European prosperity, lessened trade restrictions, and economic growth in Latin America may improve them.

* ——— and Guttenberg, Sam.
1961. why pulpwood stumpage prices vary. Pulpwood Prod. 9(10): 14, 16, illus.
Prices of pine pulpwood stumpage from national forests in the Midsouth are highest near the Alabama-Mississippi Gulf Coast and decline toward the west and north. Most variation is related to the number of companies competing for wood, general demand for pine roundwood, size and density of the timber, and types of wood included in the sale.

HARVEST AND MANUFACTURE

* Bower, D. R.
1961. are scales better than scale sticks? South. Lumberman 203(2530): 38, illus.
Analysis of 902 truckloads of loblolly pine logs confirmed the feasibility of weight-scaling. The article lists weights per MBF for logs of various diameters and offers advice for mill owners who wish to begin weight-scaling.

* Bruce, H. D., and Fassnacht, D. L.
1958. wood houses can be fire-safe houses. Forests and People 8(4): 16-17, 44, illus.
Performance of wood in a fire compares well with that of other materials.

* Carpenter, B. E., Jr.
1959. bolts salvaged from cull oaks? South. Lumberman 199(2484): 30-31, illus.
Describes an attempt to determine if bolts from low-grade hardwoods can be profitably harvested and sawn into blanks for furniture manufacture.

* Fassnacht, D. L.
1956. boards or chips? South. Lumberman 193(2417): 243-244, illus.
If the mill owner knows his net return per MBM of low-grade lumber and per ton of chips, and the average weight per cubic foot of the wood he is sawing, he can use the tables and charts in this article to decide whether he should saw his knotty center cants or make them into pulp chips.

Gammage, J. L., and Furnival, G. M.
1957. chemical debarking in bottomland hardwoods. South. Pulp and Paper Mfr. 20(9): 78, 80, illus.
Sodium arsenite was painted on a 6-inch bole section from which the bark had been removed. Reaction varied with species, but all species could be peeled as quickly 3 to 6 months after treatment as during the spring.

Graham, W. L.
1955. carrying case for chain saw. U. S. Forest Serv. Fire Control Notes 16(3): 7, illus.
Construction details.

* Guttenberg, Sam.
1956. hand-loading days are about gone. Pulpwood Prod. 4(7): 14, 30, illus.
Mechanized woodyards for receiving pulpwood and transferring it from motor truck to railroad car are becoming more numerous. A yard at Canton, Mississippi, is saving 65,000 man-hours and 5,000 truck-hours yearly for the producers who haul pulpwood to it.

———
1957. trailers give woodyards long reach. Pulpwood Prod. 5(8): 18-20, illus
Detachable trailers, capable of carrying more than 7 cords, are replacing single-axled trucks for pulpwood hauling. The development of inexpensive machines for loading and unloading bolts has contributed to the use of these big trailers.

* ———
1957. woodyard earns place in industry. Pulpwood Prod. 5(1): 48-50, 52.
Woodyards reduce the number of man-hours required to cut and deliver pulpwood and offer a place where less-than-carload lots may be delivered and sold.

* ———
1958. cost control, at low cost. Pulp and Paper 32(7): 99-101, illus.
Offers a simple graphic method by which pulpwood producers can analyze their logging costs, and indicates the need for more sophisticated analysis.

* ———
1959. mechanized yard trend in pulpwood handling. Timberman 60(6): 56-57, illus.
See second entry above.

* ——— Fassnacht, D. L., and Siegel, W. C.
1960. weight-scaling southern pine saw logs. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 177, 6 pp., illus.
In a Louisiana study, log-to-lumber predictions were closer when based on weight of the logs than when derived from values of conventional log rules.

* ——— and Perry, J. D.
1957. weight-conscious lumbermen. South. Lumberman 195(2430): 54, 56, illus.
The choice between making a log into lumber or chips depends on (1) the net value of chips recoverable from low-grade log centers and short jacket lengths before the extra lines are sawn, and (2) the lumber values in these same log portions adjusted for the extra sawing and handling costs involved in producing finished lumber.

* Hedlund, Arnold.
1959. look at the scars! South. Lumberman 199(2489): 225-226, illus.
Amount of cull in hardwood butt logs can be estimated directly in the field if local correlations of scar length and cull volume have been established.

Kinabrew, R. G.
1960. marketing north mississippi hardwood: prime quality and specialty types. U. S. Forest Serv. South. Forest Expt. Sta. and Univ. Miss., 56 pp., illus.
The Memphis hardwood market is economically accessible by truck or rail to timber producers in the western half of north Mississippi. In 1960, prime and specialty material was bringing prices that assured profitable marketing from distances of at least 100 miles.

* Muntz, H. H.
1956. tractor tilt indicator. U. S. Forest Serv. Fire Control Notes 17(3): 4.
The indicator is a plumb bob that swings from the hood above the instrument panel and registers the degree of tilt on a color-coded scale.

* Perry, J. D.
1957. the concentration-yard industry in north georgia. Jour. Forestry 55: 451-453.
The typical concentration yard purchases, finishes, and markets lumber from portable sawmills whose output is too small to be placed advantageously on the Nation's market. The number of yards and portable mills in north Georgia has been decreasing, but the yard-mill combination is likely to be useful for some years more.

PUTNAM, J. A.
1960. BASIC DIFFERENCES IN GRADING HARDWOOD AND SOFTWOOD SAWTIMBER. Soc. Amer. Foresters Proc. 1959: 57-62, illus.
" . . . The essential requirements of their predominant end-product uses lead to contrasting criteria for and methods of grading for hardwood and softwood timber."

* RICHARDS, D. B.
1958. HIGH TEMPERATURE DRYING OF SOUTHERN HARDWOODS. Ala. Agr. Expt. Sta. Cir. 123, 12 pp., illus.
At 110°C., yellow-poplar, beech, blackgum, hickory, and sap sweetgum were dried in a short time without excessive visible defect. Hygroscopicity was noticeably decreased, but mild collapse occurred. Red oak, white oak, and sweetgum heartwood displayed severe internal checking.

* SIEGEL, W. C., and ROW, CLARK.
1960. SELLING SAWLOGS BY THE TON. Forest Farmer 19(13): 8-9, illus. *Also in* Forest Farmer (Ninth Manual ed.) 20(7): 127-128, illus. 1961. *Also in* (Tenth Manual ed.) 21(7): 123-124, illus. 1962.
Weights of logs of various diameters, lengths, and volumes, and factors for estimating board-foot content of truckloads whose weight is known.

* WRAY, CLAYTON, and MIGNERY, A. L.
1959. SOIL COVERS IMPROVE AIR-DRYING OF RED OAK. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 124.
When the ground under conventional lumber stacks was covered with roofing paper, losses of FAS by shrinkage and degrade were halved.

MEASUREMENT

* AVERY, GENE.
1957. FORESTER'S GUIDE TO AERIAL PHOTO INTERPRETATION. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 156, 41 pp., illus.
Sources and procurement of photos, preparation for use, and application in area measurement, type mapping, and volume estimation.

* ———
1958. COMPOSITE AERIAL VOLUME TABLE FOR SOUTHERN PINES AND HARDWOODS. Jour. Forestry 56: 741-745, illus.
This study, in northeast Mississippi, indicated that composite tables can yield estimates of mean cubic volume per acre within 10 percent of actual field volume when photo measurements of total height, crown diameter, and crown closure can be reliably determined. Crown closure is the most difficult of the three variables to evaluate.

* ———
1958. EASY AS P. I.! South. Lumberman 197(2465): 109-111, illus.
Multiple-choice test on identification of objects on aerial photos.

* ———
1958. HELICOPTER STEREO-PHOTOGRAPHY OF FOREST PLOTS. Photogrammetric Engin. 24: 617-624, illus.
Good stereo-pairs were obtained on panchromatic film at altitudes of 200 and 300 feet, and on color transparencies at 300 feet. Helicopter stereograms were slightly superior to 1:20,000 prints for determining average total tree heights and average tree-crown diameters. Use of color transparencies did not improve accuracy of measurement for these variables. Crown-closure estimates proved independent of photo scale, but panchromatic photography gave better results than color.

* ———
1958. SLOTTED CLIP BOARD FOR VIEWING AERIAL PHOTOS. Univ. Minn. Forestry Notes 63, 2 pp., illus.
The board facilitates study of overlapping area of 9- by 9-inch stereo pairs, as it allows interfering portions of the prints to be bent downward and out of the way.

* ———
1959. EVALUATING UNDERSTORY PLANT COVER FROM AERIAL PHOTOGRAPHS. Techniques and Methods of Measuring Understory Vegetation, pp. 82-83. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
Understory plants cannot be viewed directly on 1:20,000 aerial photographs, but assessment of plants in the dominant canopy should be useful for distributing plots for ground measurement and for predicting the composition and character of minor vegetation.

———
1959. PHOTOGRAPHING FORESTS FROM HELICOPTERS. Jour. Forestry 57: 339-342, illus.
Helicopters are well adapted to taking large-scale, low-altitude aerial photos of forest areas. To offset flying costs, however, such photos must yield information not obtainable from conventional 1:20,000 prints.

* ——— and MYHRE, D. W.
1959. COMPOSITE AERIAL VOLUME TABLE FOR SOUTHERN ARKANSAS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 172, 9 pp., illus.
Construction and application of table for mixed pines and hardwoods. Volumes, expressed in gross cubic feet per acre, are derived from stereoscopic measurements of average tree heights and crown closure percent. Also included is a table for converting differential parallax measurements in millimeters to tree heights in feet.

* BEAUFAIT, W. R., and NELSON, T. C.
1957. RING COUNTS IN SECOND-GROWTH BALDCYPRESS. Jour. Forestry 55: 588, illus.
Thrifty, second-growth baldcypress trees often appear to lay down several rings each year, but when increment-borer cores are sectioned and examined under a magnification of 20 diameters or more the true summerwood appears clearly as narrow bands of small, thick-walled cells.

* BRUCE, DAVID.
1955. A NEW WAY TO LOOK AT TREES. Jour. Forestry 53: 163-167, illus.
Prisms are compact, convenient instruments for cruising timber by the point-sampling technique.

* ECHOLS, R. M.

1959. ESTIMATION OF PULP YIELD AND QUALITY OF LIVING TREES FROM PAIRED-CORE SAMPLES. TAPPI 42: 875-877, illus.

To reduce variation from causes such as eccentricity and compression wood, pairs of samples for specific gravity and ring width measurements are taken from opposite sides of trees, and include all growth rings from pith to bark. Measurements are converted to estimated pulp yield to derive wood-quality index values.

* ———— and BOWDEN, A. B.

1961. INEXPENSIVE RING ANALYZER FOR CUMULATIVE SUMMERWOOD MEASUREMENTS. Forest Sci. 7: 147-148, illus.

A wooden holder, moving on threaded rods, for positioning increment cores under a microscope.

* FARRAR, R. M., JR.

1961. SECTOR FORK VERSUS CALIPERS OR TAPE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 136.

A test with longleaf pine in south Alabama indicated that the Bitterlich sector fork may be used for tree diameter measurements when accuracy of about ± 0.7 inch is acceptable.

FASSNACHT, D. L.

1955. GRID SYSTEM FOR RANDOMIZED BLOCK LAYOUT. Jour. Forestry 53: 34-35, illus.

A simple layout that uses experimental areas efficiently and simplifies the establishment and monumentation of plots.

* FREESE, FRANK.

1959. DESK CALCULATOR OR ELECTRONIC COMPUTER? Techniques and Methods of Measuring Understory Vegetation, pp. 127-132. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.

Use of electronic data-processing machines will tend to standardize vegetation-survey techniques and to encourage adoption of quantitative measures of vegetational characteristics. But these machines are more efficient than hand calculators only for problems that can be clearly defined, are mathematical in nature, and involve a heavy computational load.

* ————

1960. TESTING ACCURACY. Forest Sci. 6: 139-145.

Testing the accuracy of a measurement against an accepted standard calls for a statement of the accuracy required, a measure of the accuracy attained, and an objective method of deciding whether attained accuracy is equal to required accuracy. All three criteria are met by the standard chi-square test. The t-test is unsuitable because it uses one form of accuracy, precision, to test for another form, freedom from bias.

* ————

1961. RELATION OF PLOT SIZE TO VARIABILITY: AN APPROXIMATION. Jour. Forestry 59: 679.

If the coefficient of variation (CV_1) among plots of size P_1 is known, the coefficient (CV_2) for plots of some other size (P_2) can often be approximated from the relationship

$$(CV_2)^2 = (CV_1)^2 \sqrt{\frac{P_1}{P_2}}$$

* GROSENBAUGH, L. R.

1955. BETTER DIAGNOSIS AND PRESCRIPTION IN SOUTHERN FOREST MANAGEMENT. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 145, 27 pp., illus.

It is generally undesirable, especially in the southern Coastal Plain, to regard stands as units of management or inventory. Instead, areas with meaningful, permanent boundaries and convenient working size should be established as the minimum unit for records and management prescriptions. Some tree-classes are defined to aid in prescription and assignment of management priorities. A simplified point-sampling scheme with a special tally form for collecting silvicultural data is described.

————

1956. TRICKS IN SAMPLING TREE VOLUME. La. State Univ. Fifth Ann. Forestry Symposium Proc. 1956: 85-92, illus.

Four techniques for estimating board-foot volume of trees: (1) summing merchantable heights of trees point-sampled with a 104.18-minute angle gauge and multiplying by a factor; (2) a formula in terms of d.b.h. and number of 16-foot logs which can be worked out mentally; (3) a giant-tree table; and (4) the height-accumulation method.

* ————

1958. ALLOWABLE CUT AS A NEW FUNCTION OF GROWTH AND DIAGNOSTIC TALLIES. Jour. Forestry 56: 727-730.

Discusses (1) need to gear allowable cut to actual growth and ultimate levels of growing stock desired; (2) advantage of straight-line (simple interest) projection of forest stands; (3) advantages of a new allowable-cut formula utilizing simple annual growth rates and setting forth goals and assumptions explicitly; (4) need for permanent point-samples or plot-samples to provide feedback information; (5) importance of periodic coverage of all record-units by a cheap but valuable diagnostic tally primarily silvicultural in objective but useful in crystallizing marking prescriptions and in allocating allowable cut and available funds.

* ————

1958. GIANT-TREE VOLUMES FOR MACHINE USE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 117.

Formulae for electronic calculation of sectional tree volumes as a function of length. A constant taper of 2 inches in 16 feet is assumed.

* ————

1958. POINT-SAMPLING AND LINE-SAMPLING: PROBABILITY THEORY, GEOMETRIC IMPLICATIONS, SYNTHESIS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 160, 34 pp., illus.

Explains new theory of sampling forest trees with probability proportional to some element of tree size, gives underlying statistical and geometric bases, discusses possible sources of bias and how to avoid them, and synthesizes theories into techniques for efficient application.

* ————

1958. THE ELUSIVE FORMULA OF BEST FIT: A COMPREHENSIVE NEW MACHINE PROGRAM. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 158, 9 pp., illus.

Outlines use of a new and completely self-contained multiple regression program developed for the IBM 704. The program gives coefficients, constants, and regression sums of squares for all possible regressions involving linear combinations of 9 or fewer independent variables. It will accept as input either a matrix from any number of sets of observations or raw data from 500 or fewer sets of observations. Cost of processing is very moderate, considering that as many as 511 different regressions are given.

GROSENBAUGH, L. R.

1959. POINT-SAMPLING TAPES AND CLINOMETERS NOW COMMERCIALLY AVAILABLE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 121.

Specially graduated 100-foot tapes have been designed and manufactured to enable speedy field check of trees doubtfully "in" or "out" of point-sample tally with a BA factor of either 10 or 75.625. Also available are specially graduated clinometers that read directly both maximum slope and the multiplier appropriate to all per-acre estimates made at any point on that slope.

* ————

1960. QUANTIFICATION AND ESTIMATION IN FUTURE FOREST MANAGEMENT. Soc. Amer. Foresters Proc. 1959: 117-121.

How forest management of the future may overcome complications attributable to space, time, and stand structure; what advances in devising appropriate scales and instruments may be anticipated; and how the problem of correlating product-yield with standing tree measurements may be met. Potential contributions of air transport, high-speed computers, electronic devices, and statistical theory are briefly outlined.

* ————

1960. SHOULD CONTINUITY DOMINATE FOREST INVENTORIES? Short Course in Continuous Inventory Control in Forest Management Proc., pp. 74-83, illus. Univ. of Ga. Center for Continuing Education.

Forest management objectives require at least 3 kinds of inventory: permanent samples for estimates of growth or trend, ephemeral samples for diagnosing area needs and priorities, and product-outturn samples for relating standing tree classes to end-product quality or values. Permanent plots are useful only for growth estimates. Point-sampling can be efficiently used for all 3 objectives. Illustrates simple point-sampling computations for permanent point-samples and for cheap diagnostic tallies.

* ————

1961. OF TREES, SPACE, TIME, AND KNOTS. Ia. State Univ. Forestry Club, Ames Forester 48: 20-23.

At least 7 different classes of variables affecting timber quality can be recognized, but the relative importance of each and the optimum condition vary with the given end-product. Some aspects of quality are technological and abrupt—unacceptable end-products are derived from timber below certain quality thresholds. Other aspects are economic and continuous—costs eat into profits as quality gradually drops. Silviculture affects quality of existing stands largely through allocation of growing space, selection of stems for retention, length of rotation, and pruning. A prognosis of the impact of quality considerations on southern silviculture is made.

* ———— and STOVER, W. S.

1957. POINT-SAMPLING COMPARED WITH PLOT-SAMPLING IN SOUTHEAST TEXAS. Forest Sci. 3: 2-14.

With a wedge-prism point-samples were taken concentric with quarter-acre plot-samples at 655 locations in 12 counties of east Texas. Differences between the two types of sample were only 1/10 of 1 percent for basal area and total cubic volume, and 1.1 percent for sawlog volume—well within limits attributable to sampling variation alone.

* MESAVAGE, CLEMENT.

1961. EXPLORATORY RELATIONS OF STAND GROWTH TO MEASURABLE ELEMENTS OF STAND STRUCTURE. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 182, 4 pp.

The Southern Station's IBM 704 Regression Program was used to select equations for predicting basal-area growth of shortleaf pine over a two-year span.

———— and GROSENBAUGH, L. R.

1956. EFFICIENCY OF SEVERAL CRUISING DESIGNS ON SMALL TRACTS IN NORTH ARKANSAS. Jour. Forestry 54: 569-576, illus.

Plots of 0.1-acre or less tended to be more efficient than larger plots except where a very sparse tree population was being sampled. An equispaced arrangement of plots tended to be more efficient than any other. Techniques for assessing precision and efficiency of various plot sizes and plot arrangements are illustrated.

* ———— and SMITH, W. S.

1960. TIMESAVERS FOR INSTALLING DENDROMETER BANDS. Jour. Forestry 58: 396, illus.

A stamp for impressing a 3-inch scale on an aluminum band.

* MYHRE, D. W., and MEYER, M. P.

1961. TREE IMAGE RECOVERY ON AERIAL PHOTOGRAPHS AS AFFECTED BY PRINTING METHOD AND FILM. Jour. Forestry 59: 97-99, illus.

In medium-scale aerial photography of northern Minnesota forests, little difference was found between full-scan electronic prints and conventional contact prints. Tree-crown recovery was better on panchromatic than on infrared photography.

* SAND, N. H.

1957. REVOLUTION IN TIMBER CRUISING. Amer. Forests 63(4): 32-34, 66-67, illus. *Also as* DIE WINKELZÄHLPROBE IN AMERIKA. Holz-Kurler 12 (23). Transl. Dr. W. Bitterlich.

After the Austrian forester Walter Bitterlich conceived the basic idea of "variable plot radius" for measuring the basal area of forest stands, L. R. Grosenbaugh developed the idea into a complete theory. The use of prisms for angle-gauges enhanced the practicality of the method, and a Forest Survey trial in east Texas proved its inherent accuracy.

* THAMES, J. L., and URSIC, S. J.

1959. PRECISE TEMPERATURE CONTROL WITH THERMOCOUPLES. Agr. Engin. 40: 401-402, illus.

Control within ± 0.3° F. was obtained with an easily assembled arrangement of a portable potentiometer and an inexpensive photoelectric circuit.

TOOLE, E. R., and GAMMAGE, J. L.

1959. DAMAGE FROM INCREMENT BORINGS IN BOTTOMLAND HARDWOODS. Jour. Forestry 57: 909-911, illus.

Though the borer holes callused over in 2 years, the stain that developed around most of them would constitute a defect in logs intended for factory lumber or veneer. Some holes had rot infections.

URSIC, S. J., and MCCLURKIN, D. C.

1959. SMALL PLOTS FOR MEASURING VEGETATION COMPOSITION AND COVER. Techniques and Methods of Measuring Understory Vegetation, pp. 70-78. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.

Guidelines for determining optimum shape, size, number, and distribution of sample plots.

RANGE

Boyer, W. D.

1958. LONGLEAF PINE ESTABLISHMENT AND FIRST-YEAR SURVIVAL UNAFFECTED BY MODERATE GRAZING. Jour. Forestry 56: 655.

Cattle stocking was 1 cow for 60 acres of Alabama forest range; utilization averaged 22 percent. The grazing had a negligible effect on seedling establishment and first-year survival, but sustained heavy grazing before seedfall may be harmful.

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1958. LONGLEAF SEEDLINGS ENDURE MODERATE GRAZING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 113.

See preceding entry.

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1959. HARVESTING AND WEIGHING VEGETATION. Techniques and Methods of Measuring Understory Vegetation, pp. 11-16. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.

Though the weight method of sampling herbage is laborious, it is highly useful both in research and in range and pasture management.

* Campbell, R. S.

1955. INTEGRATION OF GRAZING AND TIMBER PRODUCTION IN THE DEEP SOUTH. Soc. Amer. Foresters Proc. 1954: 199-201.

Cattle grazing promises to continue as a permanent use of forest land in the longleaf-slash pine belt. If properly managed, cattle will do little damage to pine regeneration, and they will utilize grass and other forage that might otherwise feed wildfires.

* ———

1955. VEGETATIONAL CHANGES AND MANAGEMENT IN THE CUT-OVER LONGLEAF PINE-SLASH PINE AREA OF THE GULF COAST. Ecol. 36: 29-34, illus.

The secondary plant succession is being influenced by timber cutting, burning, and grazing. The increasing intensity of land management is also raising problems concerning the fertility and physical condition of forest soils.

* ———

1957. GRAZING IN SOUTHERN PINE FORESTS. La. State Univ. Sixth Ann. Forestry Symposium Proc. 1957: 13-20.

" . . . Much of our Coastal Plain forest land will be grazed by livestock for years to come . . . . With the forester's interest and cooperation, much better integration of timber growing, livestock grazing, and game habitat can be achieved."

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1959. THE IMPORTANCE OF UNDERSTORY MEASUREMENT IN FOREST AND RANGE RESEARCH. Techniques and Methods of Measuring Understory Vegetation, pp. 2-3. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.

Purpose, scope, and organization of the U. S. Forest Service Conference on Techniques and Methods of measuring Understory Vegetation, held at Tifton, Georgia, October 27-31, 1958.

* ———

1960. USE OF FIRE IN GRASSLAND MANAGEMENT. Prepared for FAO First Working Party on Pasture and Fodder Development in Tropical America, Maracay, Venezuela, October 1960. 10 pp., Spanish summary.

Damages caused by wildfire, uses of planned fires and procedure for conducting them.

* ——— and Cassady, J. T.

1955. FORAGE WEIGHT INVENTORIES ON SOUTHERN FOREST RANGES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 139, 18 pp., illus.

Specific instructions for inventorying forage on cattle and deer ranges.

Cassady, J. T.

1955. GRAZING ON FOREST LAND. Forest Farmer Manual. Ed. 3, pp. 144-146, illus. *Also in* Ed. 4, pp. 144-146, illus. 1956. *Also in* Ed. 5, pp. 128-129, illus. 1957. *Also in* (Sixth Manual ed.) 17(7): 132-133, illus. 1958. *Also in* (Seventh Manual ed.) 18(8): 126-127, illus. 1959.

Properly managed herds will cause essentially no damage to the timber or watershed. Generally, forest grazing should be limited to the Coastal Plain, especially the longleaf-slash pine belt.

———

1955. SHOULD PINE WOODS BE GRAZED? Prog. Farmer (Tex. ed.) 70(6): 32, 127, illus.

Practical advice on carrying capacity of forest ranges, methods of herd management, and ways of avoiding damage to pines.

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1959. GENERAL REVIEW OF METHODS AND TECHNIQUES FOR MEASURING PRODUCTION AND UTILIZATION. Techniques and Methods of Measuring Understory Vegetation, pp. 5-10. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.

"The trend . . . has been from the extensive to the intensive, from estimates to direct measurements or to measurements supplemented by carefully checked estimates. In general, techniques are becoming more efficient and more direct."

* ——— Hopkins, Walt, and Whitaker, L. B.

1955. CATTLE GRAZING DAMAGE TO PINE SEEDLINGS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 141, 14 pp., illus.

Observations in central Louisiana suggest that some damage can be expected when cattle graze an area during the first few years after it has been seeded or planted to pine. If grazing is permitted in such young stands, it should not start before May 1, and should be regulated so that not more than half of the green forage is used during the entire season.

——— and Whitaker, L. B.

1957. SUPPLEMENTAL FEEDING AND MANAGEMENT OF BEEF CATTLE ON FOREST RANGE IN LOUISIANA. Soc. Amer. Foresters Proc. 1956: 52-54.

Supplemental feeding, together with good herd and range management, improved the weight and condition of the cows, and increased the calf crop and the market weight of the calves.

* Duncan, D. A.

1958. TRACE MINERALS AMPLE ON WOODS RANGE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 117.

See Duncan and Epps, 1958, La. Agr. Expt. Sta. Bul. 516.

Duncan, D. A.
1959. WEIGHT METHODS FOR MEASURING HERBAGE UTILIZATION. Techniques and Methods of Measuring Understory Vegetation, pp. 32-35. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
Clipping and weighing is accurate but laborious. Methods involving measurements of plant weight and relations of height to weight are less accurate but faster.

* ———— and Epps, E. A., Jr.
1958. MINOR MINERAL ELEMENTS AND OTHER NUTRIENTS ON FOREST RANGES IN CENTRAL LOUISIANA. La. Agr. Expt. Sta. Bul. 516, 19 pp., illus.
Longleaf pine-bluestem native forest ranges in central Louisiana seem to contain ample trace minerals for cattle nutrition. Of major nutrients, potassium is abundant and calcium is adequate, but phosphorus is deficient at all seasons and crude protein is seriously lacking except in spring and early summer.

———— and Epps, E. A., Jr.
1958. MINOR MINERALS AND OTHER NUTRIENTS IN LOUISIANA RANGE FORAGE. Jour. Range Mangt. 11: 247-248.
See preceding entry.

———— and Epps, E. A., Jr.
1959. WHAT SUPPLEMENTS ARE NEEDED ON FOREST RANGE? Gulf Coast Cattleman 25(9): 33-34.
See second entry above.

* ———— and Whitaker, L. B.
1958. A NEW LOOK AT THE POSSIBILITIES OF FOREST RANGES AND RANGE CATTLE IN LOUISIANA. Forests and People 8(2): 26-28, 48-49, illus.
A program of supplemental feeding, coupled with good herd and range management, doubled the productivity of cattle grazing on forest range.

———— and Whitaker, L. B.
1959. CATTLE REPELLENTS FOR PLANTED PINES. U. S. Forest Serv. Tree Planters' Notes 36, pp. 9-12, illus.
A mixture of copper carbonate and asphalt emulsion is effective and economical.

* ———— and Whitaker, L. B.
1959. REPELLENTS REDUCE CATTLE BROWSING ON PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 119.
See preceding entry.

* Duvall, V. L., and Whitaker, L. B.
1959. NOW! A CATTLE REPELLENT FOR PINES. Forests and People 9(4): 32-33, 46, illus.
See second entry above.

Grelen, H. E.
1959. THE BASAL AREA METHOD FOR MEASURING GROUND COVER. Techniques and Methods of Measuring Understory Vegetation, pp. 45-47. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
In ecology; basal area refers to ground cover at a height of one inch; basal-area measurements give reliable indications of vegetational change or range trend.

* Halls, L. K.
1959. COORDINATION OF CATTLE GRAZING AND TIMBER GROWING ON SOUTHERN COASTAL PLAIN FORESTS. Soc. Amer. Foresters Proc. 1958: 192-195, illus.
"Coordination . . . encompasses a multitude of factors ranging from personal attitude and managerial ability to basic understanding of the reproduction, growth, and management of livestock, forage, and timber."

* ———— and Duvall, V. L.
1961. PROFITS AND COST OF FOREST GRAZING. Forest Farmer (Ninth Manual ed.) 20(7): 151-152, illus. *Also in* (Tenth Manual ed.) 21(7): 149-150, illus. 1962. *Also in* Gulf Coast Cattleman 27(7): 5-6, illus. 1961.
On longleaf pine-bluestem ranges of Louisiana and east Texas, outlay per cow may be about $285 for investment and $49 annually for operating. A well-managed herd should average 6 to 10 percent on the investment.

* ———— Hughes, R. H., and Peevy, F. A.
1960. GRAZED FIREBREAKS IN SOUTHERN FORESTS. U. S. Dept. Agr. Agr. Inform. Bul. 226, 8 pp., illus.
Guide to the establishment and maintenance of grazed firebreaks. These strips of improved pasture aid in fire protection and provide forage for livestock and game.

* ———— Read, R. A., and Crawford, H. S., Jr.
1960. FORAGE AND GROUND-COVER CONDITIONS IN UNMANAGED OZARK FORESTS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 1-6, illus.
Minimal grazing and control of fire from 1947 to 1957 bettered ground-cover conditions but not forage values. Understory vegetation fluctuated from year to year, being influenced chiefly by distribution of rainfall. Yield of herbaceous vegetation in the woodlands after 10 years of conservative use was less than one-fifth of that on open meadow.

* Johnson, R. L.
1960. CATTLE GRAZING IN DELTA FORESTS. Miss. Farm Res. 23(1): 5, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 655, 2 pp., illus.
If bottom-land hardwood forests are to be grazed at all, they should be used only for short periods in spring, and then only lightly. Usually the meager returns from the forage will not justify the hazard to the timber.

* Moyle, R. C.
1956. GRAZING DAMAGE TO LOBLOLLY PINE. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 104.
Damage by cattle and deer was most serious in winter.

Peevy, F. A.
1957. RESEEDING FOREST RANGES. Prog. Farmer (Miss.-Ark.-La. ed.) 72(3): 171.
Louisiana forest ranges can be reseeded by applying 1,000 pounds of basic slag per acre on a disked site and sowing common or sericea lespedeza in combination with Bahiagrass or carpetgrass.

* ———— and Cassady, J. T.
1957. CASE FOR THE SEEDED FIREBREAK. Forest Farmer 16(10): 4-5, 16-18, illus.
Recommendations for preparing firebreaks seeded to lespedeza and carpetgrass. If kept closely grazed, such breaks are good firestoppers. They also supplement native forage.

Smith, L. F., Campbell, R. S., and Blount, C. L.
1955. FORAGE PRODUCTION AND UTILIZATION IN LONGLEAF PINE FORESTS OF SOUTH MISSISSIPPI. Jour. Range Mangt. 8: 58-60, illus.
Forage, mainly little bluestem and slender bluestem, varied from 850 pounds per acre in an open pine stand to 400 pounds under dense timber. Spring was the best grazing season.

* ———— Campbell, R. S., and Blount, C. L.
1958. CATTLE GRAZING IN LONGLEAF PINE FORESTS OF SOUTH MISSISSIPPI. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 162, 25 pp., illus.
Both cattle and timber fared well when forest range was moderately grazed during the spring

and summer. Forest grazing is not recommended in winter.

* Stover, W. S., and Campbell, R. S.
1955. cattle grazing in east texas forests. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 95.
More than 80 percent of east Texas forest land is grazed.

* Whitaker, L. B., and Duvall, V. L.
1960. common-range technique in supplemental feeding experiments. Jour. Range Mangt. 13: 263.
After 30 days of training, cattle in various experimental groups grazed together as a herd on the range but went to separate pens for protein rations.

* Williams, R. E., Cassady, J. T., Halls, L. K., and Woolfolk, E. J.
1955. range resources of the south. Ga. Agr. Expt. Stas. Bul. (n. s.) 9, 31 pp., illus.
Describes and illustrates the major range types of the South.

Woods, F. W.
1959. nutritional aspects of wiregrass from west florida sandhills. Jour. Range Mangt. 12: 141.
Wiregrass was most nutritious in the spring and on burned ranges. At best, crude protein approached minimum estimated requirements for beef cattle, while calcium, magnesium, potassium, and sodium were adequate. Phosphorus was seriously deficient.

WILDLIFE

Blair, R. M.
1957. a step forward—forest game habitat research. Forests and People 7(2): 34-35, 46, 54-55, illus.
Game habitat problems in Louisiana, and a summary of planned habitat studies.

———
1959. weight techniques for sampling browse production on deer ranges. Techniques and Methods of Measuring Understory Vegetation, pp. 26-31. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
Browse is difficult to inventory. Many weight techniques have been devised, but all are variations of one of three standard procedures: actual measure by clipping and weighing, weight estimates, or a combination of clipping and estimating.

* ———
1960. deer forage increased by thinning in a louisiana loblolly pine plantation. Jour. Wildlife Mangt. 24: 401-405, illus.
The plantation was thinned at ages 20 and 25 years to basal areas of 100, 85, and 70 square feet of pine per acre. By age 29, hardwoods had developed in inverse relation to pine stocking and correspondingly limited growth of understory vegetation suitable for deer. Per-acre yields of palatable browse ranged from 90 pounds under light thinning to 137 under heavy.

* Burke, H. D.
1955. a holm for game. South. Lumberman 191(2393): 190, illus.
Holms are forest areas reserved for game in a forest managed for timber. They can frequently be established at very little cost in parts of the forest that do not fit well into the general management plan.

———
1956. game habitat and the multiple use of southern forest ranges. Jour. Range Mangt. 9: 164-166.
Close correlation is needed between timber, wildlife, and game.

* ———
1956. wildlife habitat research needs in southern forests. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 149, 64 pp., illus.
Information is particularly lacking on the effects of silvicultural practice, season, soil differences, and animal use on the volume and quality of food plants within the major forest types.

* ——— and Blair, R. M.
1957. game as a product of intensively managed forests. Soc. Amer. Foresters Proc. 1956: 190-191.
The management of forests to include wildlife will require the cooperation of landowners, forest and game managers, researchers, and the public.

* Burns, R. M.
1957. rabbits prefer sweetgum to pine. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 111.
In north Mississippi, rabbits damaged 10 percent of newly planted gums, 4 percent of shortleaf pines, and 1 percent of slash and loblolly.

Crawford, H. S., Jr.
1959. sampling the production of fruits and seeds of woody and herbaceous plants. Techniques and Methods of Measuring Understory Vegetation, pp. 116-122. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
Factors that influence fruiting and seeding, and methods of sampling production.

———
1961. eastern redcedar, juniperus virginiana. Deer Browse Plants of Southern Forests, pp. 34-35, illus. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
See Halls and Ripley, 1961.

———
1961. identifying greenbrier growth. Jour. Range Mangt. 14: 42, illus.
On current growth of Smilax bona-nox *L., most persistent leaf bases are brown or light green; on old growth all bases look bleached and papery white.*

Goodrum, P. D., and Halls, L. K.
1961. fringetree, chionanthus virginicus. Deer Browse Plants of Southern Forests, pp. 10-11, illus. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
See Halls and Ripley, 1961.

Halls, L. K.
1959. wildlife habitat research in the south: status and needs. Soc. Amer. Foresters Proc. 1958: 130-133.
Increased pressure for recreational use of forest lands in the South dictates the expansion of research in game habitat. Assessment of wildlife potential requires an objective inventory, analysis, and interpretation of the vegetation.

* Halls, L. K., and Crawford, H. S., Jr.
1960. deer-forest habitat relationships in north arkansas. Jour. Wildlife Mangt. 24: 387-395, illus.
In a favorable forest habitat, deer herds first increased rapidly, then declined as overbrowsing curtailed forage growth. Habitat was also affected by the development of the timber stand: as trees increased in size and density they excluded most of the understory, but forage became more plentiful after a timber harvest.

———— and Goodrum, P. D.
1961. japanese honeysuckle, lonicera japonica. Deer Browse Plants of Southern Forests, pp. 38-39, illus. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
See Halls and Ripley, 1961.

———— and Ripley, T. H.
1958. the future of wildlife in the southern forest. Forest Farmer 18(3): 5, 14-16.
Describes current forest wildlife habitat research and suggests several lines of investigation.

* ———— and Ripley, T. H. (Editors)
1961. deer browse plants of southern forests. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas., 78 pp., illus.
Illustrated guide to identification of about 35 species or species groups, with some information on forage value and management. Accounts of the individual species were prepared by authorities from all parts of the South.

Rich, R. W.
1959. aerial photography as a means of measuring plant cover and composition. Techniques and Methods of Measuring Understory Vegetation, pp. 79-81. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
Describes a method of classifying forest stands from small-scale panchromatic photographs and procedures for sampling vegetation within types delineated from photograph.

————
1961. yellow jessamine, gelsemium sempervirens. Deer Browse Plants of Southern Forests, pp. 24-25, illus. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
See Halls and Ripley, 1961.

Stearns, F. W.
1959. floristic composition as measured by plant number, frequency of occurrence, and plant cover. Techniques and Methods of Measuring Understory Vegetation, pp. 84-94, illus. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
" . . . Recently developed indices extend the possibilities for application of floristic analysis to many management and research problems."

SITE

Beaufait, W. R.
1955. soil profile observations relating to drought damage in black willow stands. Jour. Forestry 53: 517.
Black willows on deep clay soil survived a drought that killed willows on adjacent sites where the clay was only 32 inches deep and underlain by fine sand. The roots had penetrated the clay deeply, but had extended only a few inches into the usually saturated sand.

* ————
1956. influence of soil and topography on willow oak sites. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 148, 12 pp., illus.
In the Mississippi Delta, growth of willow oak can be predicted from the topographic position of the stand and the percent of clay in the soil. In non-Delta river bottoms of the South the topographic position and amount of potassium can be used as indices.

* Broadfoot, W. M.
1960. field guide for evaluating cottonwood sites. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 178, 6 pp.
Two methods applicable to the Midsouth. The first provides a fast field classification of sites from determinations of soil texture, internal drainage, and inherent moisture conditions. The second requires the soil to be identified by standard series and phase.

* ————
1961. guide for evaluating cherrybark oak sites. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 190, 9 pp., illus.
Three methods are described. The two most accurate require determinations of topsoil depth, internal drainage as indicated by depth to mottling, and presence or absence of a hardpan.

* ————
1961. site affects grade of cherrybark oak. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 134.
Number of potential logs, vigor, and grade of butt log declined as site index fell below 95; insect attack increased.

* ————
1961. topsoil makes site difference for cherrybark oak. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 132.
On loess ridges in the Midsouth, sites with more than 6 inches of topsoil are significantly better than those with less.

* ———— and Krinard, R. M.
1959. guide for evaluating sweetgum sites. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 176, 8 pp., illus.
Three methods of estimating sweetgum sites in the Midsouth: from amounts of clay and exchangeable potassium in the 36- to 48-inch soil layer; from texture and drainage characteristics of the soil; and from tabulated averages for standard soil series and phases.

* ———— and Krinard, R. M.
1961. growth of hardwood plantations on bottoms in loess areas. U. S. Forest Serv. Tree Planters' Notes 48, pp. 3-8, illus. *Also in* Forest Farmer 21(5): 9-11, illus. 1962.
Pictorial description of 17- to 25-year-old plantations, chiefly of oaks and gums.

* ———— and McKnight, J. S.
1961. soil suitability for hardwoods in mississippi delta.

Miss. Farm Res. 24(6): 5. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 716, 2 pp.
Tabular summary.

* ———— and McKnight, J. S.
1961. soil suitability for forest trees in deep loess area. Miss. Farm Res. 24(9): 5. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 722, 2 pp.

* ———— and McKnight, J. S.
1961. soil suitability for forest trees in thin loess area. Miss. Farm Res. 24(10): 8. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 729, 2 pp.

* Burton, J. D., and Gwinner, M. W.
1960. plateau pines weather ordeal by ice. South. Lumberman 201(2513): 106-108, illus.
A severe ice storm struck the Cumberland Plateau in March 1960. Loblolly plantations recently thinned for pulpwood, and Virginia pine more than 25 years old, were hardest hit; but most trees recovered by the end of summer. In shortleaf pine only young stands were damaged, and white pine plantations were unaffected. Loblolly is not native to the region and its performance is encouraging.

Croker, T. C., Jr.
1958. soil depth affects windfirmness of longleaf pine. Jour. Forestry 56: 432, illus.
Windthrow from a hurricane was worst on sites underlain by clay at a shallow depth.

* Nelson, T. C., and Beaufait, W. R.
1957. studies in site evaluation for southern hardwoods. Soc. Amer. Foresters Proc. 1956: 67-70, illus.
An account of current studies by the Southeastern and Southern Forest Experiment Stations.

* Row, Clark.
1960. soil-site relations of old-field slash pine plantations in carolina sandhills. Jour. Forestry 58: 704-707, illus.
Heights of slash plantations were estimated from their age and two soil variables: depth to a fine-textured horizon, and thickness of the A_1 horizon.

* Shoulders, Eugene.
1959. loblolly and slash pines make good growth. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 124.
The two species appear to grow about equally well on moist, well-drained sites in Louisiana.

* Wakeley, P. C., and Marrero, José.
1958. five-year intercept as site index in southern pine plantations. Jour. Forestry 56: 332-336, illus.
The intercept was taken as the 5-year period during the first year of which the tree attained breast height, and was determined by counting the whorls of primary branches. The method is mainly for use with stands up to 20 years old. One of its advantages over the conventional total height-total age method of site evaluation is that age of the trees need not be known.

Williston, H. L.
1958. loblolly preferred over shortleaf. Miss. Farm Res. 21(8): 7, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 600, 2 pp., illus.
See next entry.

* ————
1958. shortleaf versus loblolly pine in north mississippi. Jour. Forestry 56: 761.
At age 23, loblolly plantations have produced 13 cords more wood per acre than adjacent shortleaf plantations.

* ————
1959. growth of four southern pines in west tennessee. Jour. Forestry 57: 661-662.
Though planted well beyond their natural range, longleaf, slash, and loblolly pine have outgrown the native shortleaf. After 29 growing seasons, volumes per acre are 43 cords for loblolly, 39 for longleaf, 36 for slash, and 28 for shortleaf.

* ————
1960. loblolly moves north. Forest Farmer 19(9): 11, 18, illus.
Three plantations, all established before 1940, indicate that loblolly can do well in north Mississippi and western Tennessee.

Woods, F. W.
1957. factors limiting root penetration in deep sands of the southeastern coastal plain. Ecol. 38: 357-359, illus.
Roots form a thick mat in the 0- to 3-inch zone, seemingly because (1) many summer rains do not penetrate deeper, (2) this zone is more fertile than deeper ones, (3) surface temperatures in winter are warm enough for some growth, (4) organic matter decomposes in this zone before it is transported to lower depths.

———— Copeland, O. L., Jr., and Ostrom, C. E.
1957. soil management for forest trees. *Soil.* U. S. Dept. Agr. Yearbook 1957: 710-715, illus.
While the management of forest soils is still in its infancy, problems of soil water deficiencies and surpluses, soilborne diseases, fertility requirements for trees, and soil structure and stabilization are receiving increasing attention.

* Zahner, Robert.
1957. field procedures for soil-site classification of pine land in south arkansas and north louisiana. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 155, 17 pp., illus.
Factors affecting site quality, how to measure site factors and estimate site index, and suggestions for mapping tracts in terms of site quality.

* ————
1957. mapping soils for pine site quality in south arkansas and north louisiana. Jour. Forestry 55: 430-433, illus.
Mappable soil characteristics include surface soil thickness or texture, subsoil texture, and slope. A sample site-quality map of an 800-acre tract was prepared at a cost of about 0.1 man-hour per acre.

————
1958. for growing pines, how good is your land? Forest Farmer 17(8): 6-7, illus.
Suggestions for recognizing soil and topographic features that influence pine growth in south Arkansas and north Louisiana.

————
1958. our current research needs: soil, water and tree relationship. Forest Farmer 18(2): 14-15, illus.
Applied soils studies that are most needed fall into three groups: present site evaluation, prospective site evolution, and site amendment. But effective applied research cannot be carried on indefinitely without a program of basic research into the relations between soils and tree development.

* ————
1958. site-quality relationships of pine forests in southern arkansas and northern louisiana. Forest Sci. 4: 162-176, illus.
Loblolly does best on well-drained small stream bottoms. Both loblolly and shortleaf thrive on the well-drained loess, upland terrace, and flatwoods soils. In all topographic positions, the best sites are those with moderately deep sandy loam surface soils and clay loam subsoils.

WATERSHED

* Andrews, L. A., and Broadfoot, W. M.
1958. the san dimas soil core sampler. Soil Sci. 85: 297-301, illus.
This sampler was designed to take undisturbed cores in deep soils, for the calibration of fiberglas soil-moisture units. It is also suitable for determinations of bulk density and soil-moisture tension.

* Barrett, J. P.
1961. soil texture and soil moisture values closely related. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 135.
Moisture equivalent and percent moisture at 15 atmospheres' tension are closely related to soil texture. Moisture equivalent and percent moisture at 1/3-atmosphere are highly correlated.

* Bassett, J. R., and Andrew, L. E.
1960. soil series can be grouped for special uses. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 130.
On the basis of topographic position and clay content, soil series as depicted on county survey maps can be combined for site index classification, trafficability estimation, watershed management, or other purposes that do not require delineation of individual soil series. This is an inference from a study of four silt loams in Mississippi.

* Broadfoot, W. M.
1960. soil cracks in sharkey clay catch rainwater. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 126.
When dry, this soil can absorb 4 inches of quick-falling rain.

* ———— and Burke, H. D.
1958. soil-moisture constants and their variation. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 166, 27 pp., illus.
Values for the most commonly used constants, under specific soil and cover conditions.

* Bruce, R. R., Raney, W. A., Broadfoot, W. M., and Vanderford, H. B.
1958. physical, chemical, and mineralogical characteristics of important mississippi soils. Miss. Agr. Expt. Sta. Tech. Bul. 45, 36 pp., illus.
Soils investigated were Alligator, Atwood, Bibb, Bladen, Cuthbert, Dundee, Ecru, Grenada, Houston, Lakeland, Lexington, Memphis, Norfolk, Noxapater, Providence, Ruston, Savannah, Sharkey, Tippah, and Vaiden.

* Burke, H. D., and Krumbach, A. W., Jr.
1959. nitrogen probe for soil-moisture sampling. Jour. Geophys. Res. 64: 1039-1042, illus.
Liquid nitrogen was poured into hollow probes thrust into the soil. As the nitrogen boiled off, soil froze to the outside of the probes. The probes were withdrawn after 2 minutes and the adhering soil removed in lengths corresponding to the layers for which a sample was desired.

———— Krumbach, A. W., Jr., and Rush, E. S.
1960. laboratory tests of liquid nitrogen soil-moisture samplers. U. S. Army Engin. Waterways Expt. Sta. Misc. Paper 4-371, 29 pp., illus.
Reasonably accurate samples were obtained from soils whose moisture contents ranged from about 5 percent to well above the liquid limit.

———— and Turnbull, W. J.
1959. prediction of soil moisture from soil and weather records. Symposium Hannoversch-Münden (Water and Woodlands) 1: 69-75, illus. Publication 48, Internatl. Assoc. Sci. Hydrol. Gentbrugge, Belgium.
See entry under Carlson and Horton, 1959.

* Campbell, R. S., and Rich, R. W.
1961. estimating soil moisture for field studies of plant growth. Jour. Range Mangt. 14: 130-134, illus.
The soil-moisture prediction method developed at the Vicksburg Research Center offers a means of using rainfall records to estimate moisture in the surface foot. That such estimates may be convenient when actual measures are lacking was demonstrated with data on forage grass weights in southern Mississippi.

* Carlson, C. A.
1959. approximation of the field maximum soil moisture content. Soil Sci. Soc. Amer. Proc. 23: 403-405.
Equations for approximating field maximum from various factors were evaluated by application to 533 sites throughout the U. S. The 0.06-atmosphere moisture tension was the only single factor correlated with field maximum. With simultaneous analysis, sand content and wetness index were also primary.

* ———— and Horton, J. S.
1959. development and testing of some average relations for predicting soil moisture. Forecasting Trafficability of Soils Report 5. U. S. Army Engin. Waterways Expt. Sta. Tech. Memo. 3-331, 210 pp., illus.
Prediction relations, derived from data on sites throughout the U. S., were tested on 651 sites, mostly ones for which detailed soil-moisture and strength data were unavailable. Accuracy was within reasonable limits for well-drained soils.

———— and Pierce, R. S.
1955. the field maximum moisture content. Soil Sci. Soc. Amer. Proc. 19: 81-83, illus.
The field maximum moisture content is defined as the naturally occurring wet limit of a soil or soil layer in its natural position. For most soils studied, it coincided with the 0.06-atmosphere soil-moisture tension value of core samples, but in poorly drained soils it approached the total pore volume.

* ———— Reinhart, K. G., and Horton, J. S.
1956. predicting moisture in the surface foot of soil. Soil Sci. Soc. Amer. Proc. 20: 412-415, illus.
In connection with trafficability studies being carried on by the Corps of Engineers, U. S. Army, the Vicksburg Infiltration Project determined the relationships that influence the wetting and drying of the surface foot of soil. It then devised a bookkeeping system for using these relations to make day-to-day predictions of soil moisture content.

* Doss, B. D., and Broadfoot, W. M.
1956. properties of 91 southern soil series. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 147, 16 pp., illus.
Tabular summaries.

FERGUSON, E. R., VOIGTEL, R. M., and SMITH, J. L.
1956. A PORTABLE POWER-DRIVEN SOIL SAMPLER. Soil Sci. 81: 419-421, illus.
A gasoline engine, carried on the operator's back, drives the soil auger through a flexible cable.

HORTON, J. S.
1955. USE OF ELECTRICAL SOIL-MOISTURE UNITS IN MOUNTAIN SOILS. Twenty-Third Ann. West. Snow Conf. Proc. 1955: 20-26, illus.
When to use electrical soil-moisture units, problems in calibrating them, and a new alignment chart for temperature correction.

KING, D. B.
1955. A TEST OF KRILIUM SOIL CONDITIONER IN GULLY PLANTING. Jour. Forestry 53: 731-732.
On hard-packed kaolinitic subsoils typical of gully bottoms in north Mississippi, the soil conditioner did not improve the survival or growth of planted loblolly pines.

* KRUMBACH, A. W., JR.
1959. EFFECTS OF MICRORELIEF ON DISTRIBUTION OF SOIL MOISTURE AND BULK DENSITY. Jour. Geophys. Res. 64: 1587-1590, illus.
Topography was mapped at contour intervals of 0.3 foot. Very small changes in elevation caused significant changes in moisture and bulk density for the 6- to 12-inch layer. The variation in moisture appeared greater when measurements were by volume than by weight.

* ———— and BASSETT, J. R.
1960. SAMPLE VARIATION IN A FALAYA SILT LOAM. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Res. 1: 11-12.
Data for determining the number of samples necessary for estimating, at various accuracies, the means of 8 physical properties.

* LULL, H. W., and REINHART, K. G.
1955. SOIL-MOISTURE MEASUREMENT. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 140, 56 pp., illus.
Reviews the various methods of measuring soil moisture and evaluates those used currently. Reports a study of variations in amount of soil moisture at several sites.

MCCLURKIN, D. C.
1956. ALUMINUM FOIL USEFUL AS A SOIL SAMPLE CONTAINER. Soil Sci. 82: 179.
Foil sold for kitchen use seals soil samples tightly, is unchanged by the temperatures of drying ovens, and is very light.

* ————
1961. ERODED SITES REBUILD SLOWLY. Miss. Farm Res. 24(3): 5.
Weeping lovegrass, switchgrass, and lespedeza survived and grew for 3 years on badly eroded sites in north Mississippi, but did not substantially improve soil qualities. Lovegrass was the most adaptable of the three.

* ————
1961. FERTILIZER NO HELP TO LOBLOLLY SEEDLINGS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 131.
Loblolly pine seedlings planted on eroded Brown Loam and Coastal Plain sites in north Mississippi did not respond to heavy fertilization.

* RUSH, E. S., and REINHART, K. G.
1955. FIELD TESTS OF NUCLEAR INSTRUMENTS FOR THE MEASUREMENT OF SOIL MOISTURE AND DENSITY. U. S. Army Engin. Waterways Expt. Sta. Misc. Paper 3-117, 26 pp., illus.
The instruments were of the type developed at Cornell University for the Civil Aeronautics Administration.

SMITH, J. L.
1959. SAMPLING FOREST FLOORS AND SOILS IN THE ARKANSAS HIGHLANDS. Techniques and Methods of Measuring Understory Vegetation, pp. 114-115. U. S. Forest Serv. South. and Southeast. Forest Expt. Stas.
In soils with much rock or erosion pavement the probability of sampling error increases, and extra precautions or modifications of standard techniques are necessary.

* ———— and LAWSON, E. R.
1959. SAMPLER FOR GRAVELLY PLASTIC SOILS. Soil Sci. 88: 56-57, illus.
The sampler consists of a straight cylinder, 2.0 inches in outside diameter, with walls 1/16 inch thick. The lower opening is constricted 0.003 to 0.005 inch to hold in the sample.

* STEARNS, F. W., and CARLSON, C. A.
1960. CORRELATIONS BETWEEN SOIL-MOISTURE DEPLETION, SOLAR RADIATION, AND OTHER ENVIRONMENTAL FACTORS. Jour. Geophys. Res. 65: 3727-3732, illus.
Measurements were made in an upland meadow on loessial soil near Vicksburg, Mississippi. Highest correlations of single factors with moisture loss were obtained with soil temperature and evaporation-pan data ($r = 0.79$ each), and with solar radiation ($r = 0.76$). Values for air temperature, vapor pressure deficit, humidity, and wind were progressively lower. Correlations with soil temperature or evaporation-pan data were somewhat improved by the addition of other factors in combination. Highest correlation was obtained with a site-derived depletion curve ($r = 0.85$) from the previous year.

STEPHENSON, G. K.
1957. HOLD THAT RAINDROP! South. Lumberman 195(2441): 162-164, illus.
About 57 percent of the South's watersheds are forested. The relation of forest cover to water is complex, and research is urgently needed. Of first priority for study are the shallow-soiled mountains of Arkansas and Oklahoma and the sand-clay deposits of the Coastal Plain.

STOECKELER, J. H., and THAMES, J. L.
1958. THE LAKE STATES PENETROMETER FOR MEASURING DEPTH OF SOIL FREEZING. Soil Sci. 85: 47-50, illus.
The penetrometer consists of a steel rod, graduated in inches, sliding inside a lead-weighted driving hammer.

THAMES, J. L.
1958. HYDRAULIC INSERTER FOR SOIL-MOISTURE UNITS. Soil Sci. 86: 156-159, illus.
Construction plans for a hydraulic device to insert electrical soil-moisture units into the sidewalls of auger holes.

* ————
1959. MEASURING SOIL MOISTURE OVER LARGE AREAS WITH SINGLE INSTALLATIONS OF MOISTURE UNITS. Jour. Geophys. Res. 64: 257-262, illus.
It seems possible that with proper calibration, single installations of electrical soil-moisture units can be used to estimate moisture contents of outlying sites receiving similar amounts of rain but differing in vegetation and soils. In northern Wisconsin and west-central Mississippi, predicted moisture contents agreed closely with on-site measurements. Results were best at seasons when the soils remained near the wilting point or near field capacity.

* Thames, J. L., and McReynolds, R. D.
1961. A HYDRAULIC SOIL SAMPLER. Agr. Engin. 42: 431-432, illus.
The sampler minimizes soil disturbance. It has been used in soils representing a wide range of bulk densities and textures.

———— and Ursic, S. J.
1957. IMPROVED RAIN GAGE SUPPORTS. Jour. Soil and Water Conserv. 12: 283, illus.
Designs for a concrete base for standard gages, and for a pipe-and-plank stand for recording gages.

———— and Ursic, S. J.
1960. RUNOFF AS A FUNCTION OF MOISTURE-STORAGE CAPACITY. Jour. Geophys. Res. 65: 651-654, illus.
On small watersheds in northern Mississippi surface runoff was strongly correlated with storage opportunity in the upper 6 inches of soil. A procedure for calculating antecedent soil-moisture storage over a watershed is presented.

Tobiaski, R. A.
1959. SOIL-MOISTURE DEPLETION RATE IN PUERTO RICO LESS THAN IN DRIER CLIMATES. Jour. Forestry 57: 508-509.
See next entry.

———— Bassett, J. R., and Rush, E. S.
1960. TRAFFICABILITY PREDICTIONS IN TROPICAL SOILS; PUERTO RICO STUDY. U. S. Army Engin. Waterways Expt. Sta. Misc. Paper 4-355, Rpt. 2, 110 pp., illus.
Soil-moisture predictions based on data collected at 8 sites were reasonably accurate when applied to 22 other sites in Puerto Rico. It was found that (a) Puerto Rico soils do not lose moisture as fast as U. S. soils, and the rate of loss seems to be unaffected by season; (b) the average rate of daily moisture depletion in the surface to 12-inch layer of Puerto Rico soils is about ½ the average summer rate and about equal to the spring-autumn rate in humid climates of the U. S.

———— and Larson, D. E.
1955. THE DEVELOPMENT OF METHODS FOR PREDICTING SOIL MOISTURE CONTENT: REPORT ON THE FAIRBANKS, ALASKA, EXTENSION. U. S. Army Engin. Waterways Expt. Sta. Misc. Paper 4-135, 68+ pp., illus.
Relations were developed to allow predictions where only soil and vegetation information and a rain record are available.

* Ursic, S. J.
1961. POST-HOLE TREE PLANTING FOR STABILIZING GULLIES. Jour. Soil and Water Conserv. 16: 188-189, illus.
On badly eroded sites in northern Mississippi, holes 6 inches in diameter and 24 inches deep were made with a motorized digger, and filled with the best soil nearby. Loblolly seedlings planted on the fill survived and grew better than those on unprepared spots; spot mulching further improved survival and growth.

———— and Thames, J. L.
1958. AN INEXPENSIVE RAIN GAGE. Jour. Soil and Water Conserv. 13: 231-232, illus.
Gages can be easily constructed from used No. 10 cans.

* ———— and Thames, J. L.
1960. EFFECT OF COVER TYPES AND SOILS ON RUNOFF IN NORTHERN MISSISSIPPI. Jour. Geophys. Res. 65: 663-667, illus.
Surface runoff and peak flows were greatest from abandoned fields, intermediate from depleted upland hardwood forests, and least from 20-year-old loblolly pine plantations that had been established on eroding farm land. The pine cover has been a highly effective flood-abatement measure.

Vicksburg Research Center, Southern Forest Experiment Station.
1957. INFORMATION FOR PREDICTING MOISTURE IN THE SURFACE FOOT OF VARIOUS SOILS. Forecasting Trafficability of Soils Report 4. U. S. Army Engin. Waterways Expt. Sta. Tech. Memo. 3-331, 102 pp., illus.
Summarizes site characteristics, soil properties, climate, and other information for soil-moisture predictions from the 131 sites used in developing the prediction method. Accuracy of the method was tested for every site by comparing predicted moisture to actual.

DISEASES

TREES

* Broadfoot, W. M., and Toole, E. R.
1956. SOIL FACTORS MAY CAUSE GUM BLIGHT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 106. *Also in* South. Lumberman 193(2417): 176.
Soil-moisture stress may be the main cause of sweetgum blight.

* ———— and Toole, E. R.
1957. DROUTH EFFECTS ON SOUTHERN HARDWOODS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 111.
See next entry.

* ———— and Toole, E. R.
1958. WHAT'S CAUSING THE MORTALITY IN SOUTHERN HARDWOODS? Jour. Soil and Water Conserv. 13: 276-277, illus.
The widespread dieback of hardwoods that was noted in the South during recent years was primarily caused by drouth.

* ———— and Toole, E. R.
1959. HARDWOODS RECOVERING FROM DROUGHT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 119.
Ample rains in 1957 and 1958 halted losses of hardwoods from the record drought of 1952-1956.

* Czabator, F. J., and Enghardt, Hans.
1959. NURSERY-INFECTED SEEDLINGS DEVELOP FUSIFORM RUST CANKERS AFTER OUTPLANTING. U. S. Forest Serv. Tree Planters' Notes 37, pp. 23-25.
Many infections on southern pine nursery stock are still latent at lifting time, and hence cannot be detected during grading. The best assurance of rust-free planting stock is careful spraying with fungicides to prevent infection in the seedbed.

Davidson, R. W., Toole, E R., and Campbell, W. A.
1959. A PRELIMINARY NOTE ON THE CAUSE OF "PECKY" CYPRESS. U. S. Dept. Agr. Plant Dis. Rptr. 43: 806-808, illus.
A Stereum fungus appears to be the cause.

* Foster, A. A., and Henry, B. W.
1956. nursery control of fusiform rust demands careful spraying. U. S. Forest Serv. Tree Planters' Notes 24, pp. 13-15.
Properly done, spraying can usually keep the incidence of rust below one-half of one percent.

* Henry, B. W.
1955. basal branches no sign of rust on slash pine seedlings. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 100.
See next entry.

———
1956. basal branches no symptom of fusiform rust on slash pine seedlings. U. S. Forest Serv. Tree Planters' Notes 24, p. 16.
Branched seedlings need not be culled unless they also have globular or fusiform swellings on the stem.

Jewell, F. F.
1958. cronartium fusiforme extent below slash pine branch cankers. (Abstract.) Phytopath. 48: 394.
Mycelia could not be found more than ½ inch beyond the margins of cankers.

———
1960. inoculation of slash pine seedlings with cronartium fusiforme. Phytopath. 50: 48-51, illus.
Cotyledonary seedlings were inoculated by placing telia-bearing oak leaves over them and maintaining high humidity for 72 hours. One-year-old seedlings were inoculated by wrapping the new growth in telia-bearing oak leaves and maintaining high humidity, and also by inserting telia into new stem tissue.

* ———
1960. new pine hosts for southern fusiform rust. U. S. Dept. Agr. Plant Dis. Rptr. 44: 673.
C. fusiforme *galls were confirmed on the following previously unlisted pine hosts*: Pinus nigra *Arnold* P. cooperi *var.* ornelasi *Martinez,* P. pseudostrobus *Lindl., and* P. torreyana *Parry. Caribbean pine (correctly known as* P. caribaea *Morelet) and south Florida slash pine* (P. elliottii *var.* densa *Little & Dorman) were also confirmed as hosts of this rust; previous reports on* P. caribaea *probably referred to United States slash pine, now correctly known as* P. elliottii *Engelm. var.* elliottii.

* Koenigs, J. W.
1960. fomes annosus: a bibliography with subject index. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 181, 35 pp.
438 references.

Lightle, P. C.
1959. cone rust on slash pine controlled by ferbam. (Abstract.) Phytopath. 49: 318.
Sprays containing 2 pounds ferbam per 100 gallons of water were effective, especially if applied when the strobilus scales had opened or just after they had closed.

* ———
1960. brown-spot needle blight of longleaf pine. U. S. Dept. Agr. Forest Pest Leaflet 44, 7 pp., illus.
Hosts, symptoms, and life history of Scirrhia acicola, *and control by spraying or prescribed burning.*

* ———
1960. fomes annosus root rot of loblolly pine. U. S. Dept. Agr. Plant Dis. Rptr. 44: 423.
First known damage to loblolly was in a 21-year-old plantation in southern Mississippi during 1959. Later in the same year, the fungus was isolated from decayed roots of mature loblolly pines in a natural stand of central Alabama.

* ——— and Starr, J. W.
1957. heartrot in southern pines. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 108.
Volume loss from heartrot of southern pines has been negligible in recent years, because the stands that replaced the virgin timber do not have much heartwood yet. As the second-growth attains greater ages, this situation is likely to change.

* Siggers, P. V.
1955. control of the fusiform rust of southern pines. Jour. Forestry 53: 442-446, illus.
Life history, hosts, distribution, canker development, relation of infection to silvicultural practices and weather conditions, control in nursery and field.

Snow, G. A.
1958. cultural differences in isolates of scirrhia acicola from pinus palustris and p. taeda. (Abstract.) Phytopath. 48: 398.
See second entry below.

* ———
1960. spraying before rains important for fusiform rust control. U. S. Forest Serv. Tree Planters' Notes 43, pp. 17-18.
Slash pine nursery seedlings sprayed with ferbam 24, 48, or 72 hours before inoculation developed less rust than those sprayed 15 minutes after inoculation. Adding nickel chloride hexahydrate to the ferbam improved results.

* ———
1961. artificial inoculation of longleaf pine with scirrhia acicola. Phytopath. 51: 186-188, illus.
Longleaf and loblolly seedlings were inoculated with isolates from loblolly as well as longleaf trees. Infection occurred only on immature longleaf needles, not on loblolly. Cultural characters varied widely from isolate to isolate, and could not be correlated with infectious characteristics. Isolates from longleaf were more infective than those from loblolly.

———
1961. semicarbazone of cycloheximide for controlling brown spot needle blight. (Abstract.) Phytopath. 51: 645.
Early results warrant further tests.

* Stover, W. S., and Toole, E. R.
1955. sweetgum blight in louisiana. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 99.
See next entry.

* ——— and Toole, E. R.
1955. sweetgum blight in louisiana as determined by the forest survey. U. S. Dept. Agr. Plant Dis. Rptr. 39: 864-866, illus.
Eight percent of Louisiana's sound cubic volume of sweetgum is in blighted trees.

* Toole, E. R.
1955. performance of wilt-resistant mimosa trees in high-hazard areas. U. S. Dept. Agr. Plant Dis. Rptr. 39: 874.
Ten clones appear resistant.

* ———
1955. polyporus hispidus on southern bottomland oaks. Photopath. 45: 177-180, illus.
This fungus causes trunk cankers and decay. Associated heart rot exceeds the length of the canker by 2.38 ± 1 feet, and the length of cankers and rot increases 0.484 ± 0.02 foot yearly.

TOOLE, E. R.

1955. RED STAIN OF BOXELDER. U. S. Dept. Agr. Plant Dis. Rptr. 39: 66-67.
Fusarium negundi *Sherb. probably is the cause.*

* _____

1955. TWIG BLIGHT AND CANKER OF RED MULBERRY. U. S. Dept. Agr. Plant Dis. Rptr. 39: 657, illus.
Fusarium lateritium *(Nees) Snyder and Hansen appears to cause the blight, which so far has not been observed to kill trees.*

* _____

1956. HEARTROT IN BOTTOMLAND RED OAKS TWO YEARS AFTER INOCULATION. U. S. Dept. Agr. Plant Dis. Rptr. 40: 823-826, illus.
Polyporus hispidus, P. fissilis, *and* Fomes geotropus *have spread with equal rapidity.*

_____

1956. HISPIDUS CANKER. Forest Farmer 16(1): 7, illus.
Willow and water oaks are especially susceptible to Polyporus hispidus. *The associated rot spreads so fast that cankered trees should be salvaged quickly.*

* _____

1957. CANKER DAMAGE TO HARDWOOD STUDIED IN DELTA. Miss. Farm Res. 20(5): 3, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 563, 2 pp., illus.
Describes hispidus cankers, spiculosa cankers, and Irpex cankers. Recommends salvage of infected trees before heartrots destroy their value.

* _____

1957. FIRE SCARS ARE ENTRANCE FOR MOST HARDWOOD ROT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 112.
More than three-fourths of the butt rot in commercial hardwood trees of the Mississippi Delta enters through fire wounds.

* _____

1957. TWIG CANKER OF SWEETGUM. U. S. Dept. Agr. Plant Dis. Rptr. 41: 808-809, illus.
Botryosphaeria ribis *Gross. and Dug. can cause cankers and kill twigs of sweetgum but appears to damage only shaded or weakened branches.*

* _____

1959. CANKER-ROTS IN SOUTHERN HARDWOODS. U. S. Dept. Agr. Forest Pest Leaflet 33, 4 pp., illus.
The chief rot fungi are those causing hispidus, spiculosa, and Irpex cankers.

* _____

1959. DECAY AFTER FIRE INJURY TO SOUTHERN BOTTOM-LAND HARDWOODS. U. S. Dept. Agr. Tech. Bul. 1189, 25 pp., illus.
Although more than 30 species of fungi were found behind fire scars, 5 caused half the decay cases identified. Within 4 years after a fire, the bark sloughs off most wounds and rot is well established. Except for the first 10 years after wounding, the average rate of spread of established rot per decade is 2.0 feet for overcup oak and sugarberry, 1.6 for water hickory, 1.3 for red oaks, 1.3 for green ash, and 0.9 foot for sweetgum and elm.

* _____

1959. SWEETGUM BLIGHT. U. S. Dept. Agr. Forest Pest Leaflet 37, 4 pp., illus.
History, symptoms, and cause.

* _____

1960. BUTT ROT OF SOUTHERN HARDWOODS. U. S. Dept. Agr. Forest Pest Leaflet 43, 4 pp., illus.
Most infections enter through wounds made by fire.

* _____

1960. DECAY 5 YEARS AFTER THINNING OF SWEETGUM SPROUT CLUMPS. U. S. Dept. Agr. Plant Dis. Rptr. 44: 784-788, illus.
The clumps were about 55 years old. They had originated near groundline, and the thinning caused no rot in those reserved for growth. Stumps decayed at a rate that was linearly related to their diameter and to the length to which they had split during logging.

* _____

1960. ROOT ROT OF WHITE OAK IN ARKANSAS. U. S. Dept. Agr. Plant Dis. Rptr. 44: 783, illus.
Corticium galactinum *(Fr.) Burt was found to be associated.*

* _____

1960. WHEN TO LOOK FOR HARDWOOD BLIGHT. Forests and People 10(1): 14-15, 48, illus.
In 1952-1956 an exceptionally severe drought damaged or killed many hardwoods in the Midsouth. Sweetgums were conspicuous victims, especially those on soils having a high portion of clay or a high concentration of soluble salts. While droughts of similar proportions may be rare, it appears that species other than sweetgum should be favored on the heavier slackwater soils and on most of the rolling uplands outside the Loessial Bluffs.

_____

1961. A NEW DISEASE OF SWAMP TUPELO. (Abstract.) Phytopath. 51: 646.
Fusarium solani *kills patches of cambium on the trunk; lesions heal and become overgrown, but they constitute lumber defects.*

* _____

1961. FIRE SCAR DEVELOPMENT. South. Lumberman 203 (2537): 111-112, illus.
Records kept for 7 years after a fire in a bottomland stand of oaks and hickories suggest ways of appraising damage from past fires or predicting mortality and decay from recent burns.

* _____

1961. NEW SYCAMORE CANKER. U. S. Dept. Agr. Plant Dis. Rptr. 45: 78.
Recent observations indicate a decline of a canker that in 1956 was killing tops of some large sycamores in the Mississippi Delta.

* _____

1961. ROT ENTRANCE THROUGH DEAD BRANCHES OF SOUTHERN HARDWOODS. Forest Sci. 7: 218-226, illus.
Rot was associated with 29 percent of the dead branches examined; 25 fungus species were identified, but half the rot was ascribable to 4 species. Rate of decay varied with fungus, branch diameter at time of death, age and diameter of scar at time of sampling, and tree species.

* _____ and BROADFOOT, W. M.

1959. IRRIGATION LESSENS SWEETGUM BLIGHT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 120.
Well-stocked 40-year-old sweetgum stands were irrigated whenever available soil moisture fell below 40 percent of field maximum. The disease index dropped 68 percent, indicating marked recovery. On unwatered check plots, the disease index rose 26 percent.

_____ and BROADFOOT, W. M.

1959. SWEETGUM BLIGHT AS RELATED TO ALLUVIAL SOILS OF THE MISSISSIPPI RIVER FLOODPLAIN. Forest Sci. 5: 2-9, illus.

Significantly more blight was found on slackwater soils than on recent or old natural-levee soils. Blight increased as potassium in the 1- to 2-foot soil level increased, as sodium increased in the 2- to 3-foot level, as imbibitional water increased in the 0- to 2-foot level, and as bulk density decreased in the surface foot.

* ———— and FURNIVAL, G. M.

1957. PROGRESS OF HEART ROT FOLLOWING FIRE IN BOTTOMLAND RED OAKS. Jour. Forestry 55: 20-24, illus.

Height of heart rot in red oaks following wounding by fire can be predicted from length of hollow, height of butt bulge, or age and size of scar.

* ———— and HUCKENPAHLER, B. J.

1954. YELLOW-POPLAR DIEBACK. U. S. Dept. Agr. Plant Dis. Rptr. 38: 786-788, illus.

Symptoms and etiology of a disease believed to be caused by a species of Myxosporium on drought-weakened trees.

* ———— and LIGHTLE, P. C.

1960. STATUS OF PERSIMMON WILT, 1959. U. S. Dept. Agr. Plant Dis. Rptr. 44: 45, illus.

Wilt was reported from Oklahoma in 1959, has not recently been observed in Alabama, Arkansas, Louisiana, Mississippi, and Tennessee, even in areas where it was formerly common. All infections so far have been on sites where persimmon is a scrub or weed tree

* ———— and MORRIS, R. C.

1957. INSECT AND DISEASE PROBLEMS IN SOUTHERN HARDWOOD FORESTS. Soc. Amer. Foresters Proc. 1956: 65-67.

Much insect damage appears as defects that reduce the grade rather than the volume, and thus cause a value loss. Wood rendered cull by rot and disease is usually left in the forest or removed during primary manufacture. It represents a volume loss, but ordinarily does not degrade boards because it is not retained in the lumber.

* ———— and MORRIS, R. C.

1959. TRUNK LESION OF SWEETGUM. U. S. Dept. Agr. Plant Dis. Rptr. 43: 942-945, illus.

The lesions result from the killing of limited patches of cambium. They are common in bottom lands within about 100 miles of the Gulf Coast. Stands 10 to 20 years old tend to be most heavily infected, but occurrence in any area is patchy. The causal fungus is unidentified.

VERRALL, A. F.

1934. THE RESISTANCE OF SAPLINGS AND CERTAIN SEEDLINGS OF PINUS PALUSTRIS TO SEPTORIA ACICOLA. Phytopath. 24: 1262-1264.

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1936. THE DISSEMINATION OF SEPTORIA ACICOLA AND THE EFFECT OF GRASS FIRES ON IT IN PINE NEEDLES. Phytopath. 26: 1021-1024.

* ———

1958. FUSIFORM RUST OF SOUTHERN PINES. U. S. Dept. Agr. Forest Pest Leaflet 26, 4 pp., illus.

Hosts, symptoms, life history, and control.

* ———

1958. PRUNING MAY CUT LOSS FROM RUST CANKERS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 115.

Suggestions for pruning slash and loblolly pines, so as to keep fusiform infections on branches from developing into stem cankers.

* ———

1961. SPREAD OF CRONARTIUM FUSIFORME BRANCH INFECTIONS. (Abstract.) Phytopath. 51: 646.

Proximal growth of individual galls varied greatly from year to year but averaged 2.4 ± 0.19 inches for loblolly pine and 1.8 ± 0.13 inches for slash pine. As most stem galls result from branch infections, removing branches that have galls 15 inches or less from the stem will help check damage.

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1961. THE USE OF FUNGICIDES IN SOUTHERN FORESTS. *In* The Use of Chemicals in Southern Forests. La. State Univ. Ninth Ann. Forestry Symposium Proc. 1960: 124-129.

For most diseases, economical fungicidal control in the forest is likely to require systemics, but spraying with bordeaux to control brown spot is feasible, ferbam can probably be used efficiently to check cone rust in seed orchards, and stump creosoting may sometimes be worth while to ward off Fomes annosus *root rot.*

* ————TOOLE, E. R., and LIGHTLE, P. C.

1959. OAK WILT IN OKLAHOMA AND ARKANSAS. U. S. Dept. Agr. Plant Dis. Rptr. 43: 1288.

Oak wilt was found for the first time in Oklahoma in 1959. The infection is a few miles west of the wilt area in Arkansas. In Arkansas, the wilt has not spread beyond the general range it occupied in 1951, but there has been a buildup in Sharp and Logan Counties.

PRODUCTS

* CAMPBELL, W. A., and VERRALL, A. F.

1956. FUNGUS ENEMIES OF HICKORY. U. S. Forest Serv. Southeast. Forest Expt. Sta. Hickory Task Force Rpt. 3, 8 pp., illus.

Leaf diseases, cankers, rots, and virus diseases all attack the living tree, but on the whole do not cause serious economic loss. Logs, bolts, and lumber will mould, stain, and decay unless protected by chemical treatment or prompt handling.

SMITH, V. K., JR.

1959. TREATING STORED WOOD: DECAY IN PULPWOOD INVENTORIES CAN BE REDUCED. Pulpwood Prod. 7(2): 10, 12, illus.

Green pine pulpwood bolts can be protected for 6 months by dipping them into a fungicide-insecticide combination. An effective formulation is 2 pounds of emulsifiable gamma BHC plus 10½ pounds of sodium pentachlorophenate in 50 gallons of water.

VERRALL, A. F.

1955. CONTROL OF SAPSTAIN ESSENTIAL IN PRODUCING BRIGHT, DRY LUMBER. South. Lumber Jour. 59(3): 27, 82, illus.

Chemical dips and proper seasoning are necessary to prevent sapstain and mould in newly sawn lumber and to head off decay.

———

1955. NON-PRESSURE TREATMENTS FOR EXTERIOR WOODWORK OF BUILDINGS. Paper read at Vacuum Wood Preservers Institute, Biloxi, Miss., 4 pp.

See next entry.

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1955. PRESERVATIVE-MOISTURE REPELLENT TREATMENTS FOR WOODEN AMMUNITION PACKING BOXES—II. U. S. Army Ordnance Corps Rpt. R-1301, 56 pp., illus. Frankford Arsenal.

See Verrall, 1959, PRESERVATIVE MOISTURE-REPELLENT TREATMENTS FOR WOODEN PACKING BOXES.

VERRALL, A. F.

1956. NON-PRESSURE PRESERVATIVE TREATMENTS FOR EXTERIOR WOODWORK OF BUILDINGS. Forest Prod. Jour. 6(11): 17A-18A.

Brush, dip, and short soak treatments give protection in regions of moderate to heavy rainfall if buildings are designed properly.

* ———

1957. ABSORPTION AND PENETRATION OF PRESERVATIVES APPLIED TO SOUTHERN PINE WOOD BY DIPS OR SHORT-PERIOD SOAKS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 157, 31 pp.

Dry wood treats better than moist and end penetration is about ten times lateral penetration. On-the-job preservative applications give only surface protection and must be supplemented by building design that minimizes moisture accumulation.

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1957. HOW TO PREVENT FUNGUS DAMAGE TO WOOD STRUCTURES. Forest Prod. Jour. 7(1): 15A-17A.

To prevent decay, use well-manufactured lumber, and design structures so that water accumulation is minimized. Where decay hazard is high, choose decay-resistant or treated wood.

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1957. PRESERVATIVE-WATER REPELLENT TREATMENTS FOR WOODEN PACKING BOXES—III. SUPPLEMENTARY TESTS. U. S. Army Ordnance Corps Rpt. R-1390, 23 pp., illus. Frankford Arsenal.

See Verrall, 1959, PRESERVATIVE MOISTURE-REPELLENT TREATMENTS FOR WOODEN PACKING BOXES.

* ———

1959. CONTROL OF WOOD DECAY IN BUILDINGS. Pest Control 27(10): 9, 11-13, 16, 18, 71-72, 74, illus.

General discussion.

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1959. PRESERVATIVE MOISTURE-REPELLENT TREATMENTS FOR WOODEN PACKING BOXES. Forest Prod. Jour. 9: 1-22, illus.

After being treated with preservatives to which water-repelling formulations had been added, boxes were piled on the ground in Wisconsin, Mississippi, and the Panama Canal Zone. For temperate regions, a 3-minute dip gave satisfactory protection; for the tropics pressure treatment was desirable. Soil poisons were needed for protection against termites.

* ———

1960. CONDENSATION FROM AIR CONDITIONING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 128.

Formation of a dewpoint within wooden walls or floors occasionally leads to floor buckling or structural decay. Prevention consists in lowering inside temperatures no more than is necessary, turning off the conditioner when it is not needed, and venting or using a soil cover in moist crawl spaces.

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1960. PRESERVATIVE WATER-REPELLENT TREATMENTS FOR WIRE-BOUND VENEER BOXES. Appendix 2, Survey of suitability of present design of wire-bound boxes for M2A1 and M19A1 small arms ammunition boxes. Rpt. R-1564, pp. 15-27, illus. Frankford Arsenal.

Ten-second or longer dips in water-repellent preservatives protect wire-bound veneer boxes during outdoor storage. As rotary-cut veneers absorb excessive amounts of preservative, long-time drying may be necessary before the boxes can be used.

* ———

1960. PREVENTING MOISTURE PROBLEMS IN WOOD SIDING IN THE SOUTH. Forest Prod. Jour. 10: 148-151, illus.

Decay and paint problems can be minimized by planning for ample roof overhang, installing eaves gutters, using only wood free from incipient decay, putting breathing papers under siding and a water repellent-preservative on joints.

* ———

1960. PROLONGING LIFE OF WOOD SIDING. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 127.

See preceding entry.

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1960. THE DETERIORATION OF WOOD IN SERVICE. Utility Pole Conf. for Users, Treaters, and Prod. of Wood Poles Proc. 1960: 24-28.

Decay, subterranean termites, and marine borers cause the greatest damage.

* ———

1961. BRUSH, DIP, AND SOAK TREATMENTS WITH WATER-REPELLENT PRESERVATIVES. Forest Prod. Jour. 11: 23-26, illus.

Treatments are worth while if the buildings are designed so as to prevent frequent and severe wetting and to promote rapid drying.

INSECTS

TREES

* ALLEN, R. M., and COYNE, J. F.

1955. REDUCING LONGLEAF CONE LOSSES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 98.

See next entry.

——— and COYNE, J. F.

1956. INSECT PROBLEMS IN FOREST-TREE GENETICS. Jour. Forestry 54: 193.

In southern Mississippi sprays of benzene hexachloride (BHC) have protected immature pine cones.

* BEAL, R. H.

1958. LIFE HABITS AND CONTROL OF PINE TIP MOTH: RESULTS FROM PRELIMINARY STUDIES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 24, 5 pp., illus.

A laboratory study in southern Mississippi indicated that spraying within the week following peak emergence of the moths in spring should control adults, with perhaps a residual effect on larvae. A field test in Texas suggested that DDT may be satisfactory.

* ———

1960. PINE PITCH MOTH IN MISSISSIPPI. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 130.

Dioryctria clarioralis *(Walker), common in the southeastern Atlantic Coast States, has been found near Gulfport.*

BENNETT, W. H.

1956. IMPORTANT INSECT ENEMIES OF SOUTHERN PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 10, 21 pp., illus.

Superseded by Bennett, Chellman, and Holt, 1958.

* ———

1956. PROTECTING SHADETREE PINES FROM BARK BEETLES. Arborist's News 21(7): 60-61, illus. *Also in* Forests and People 6(4): 40-41, illus. *Also in* Forest Farmer 16 (12): 7, 17-18, illus. 1957.
Three species of Ips *attack shadetree pines, but can be prevented by fertilizing and watering the trees to keep them healthy, and by spraying with BHC.*

———

1958. IPS CONTROL IN PULPWOOD OPERATIONS. The Unit, News Letter 74, p. 8.
Ips avulsus *is especially destructive to trees of pulpwood size, but it can be checked by keeping stands thrifty, salvaging trees that might become breeding places, and treating logging slash with BHC when insect hazard is great.*

* ———

1958. THE TEXAS LEAF-CUTTING ANT. U. S. Dept. Agr. Forest Pest Leaflet 23, 4 pp., illus.
The ants are serious pests of pine seedlings in east Texas and west-central Louisiana, but can be controlled by fumigating their colonies with methyl bromide.

* ———

1958. THIS IS ALICE FRONTALIS. U. S. Dept. Agr. Program Aid 294, 20 pp., illus
Illustrated booklet on southern pine beetle.

* ———

1958. WHAT YOU SHOULD KNOW ABOUT THE BLACK TURPENTINE BEETLE. Forest Farmer 18(3): 8, 16-18, illus.
In the Midsouth, more money is spent in controlling the black turpentine beetle than any other forest insect.

———

1959. AERIAL INSECT SURVEYS IN EAST TEXAS. Tex. Forest News 38(3): 3, 8, illus.
How the Texas Forest Service, private landowners, and the Southern Forest Experiment Station conduct cooperative pest surveys.

———

1959. FOREST INSECT CONDITIONS IN LOUISIANA. *In* Insect Conditions in Louisiana, 1958, pp. 18-20. Ent. Res. Dept. La. State Univ.
The black turpentine beetle was troublesome during 1958 and the Nantucket pine tip moth was unusually prevalent. The red-headed pine sawfly defoliated young plantations in central and southwestern parishes. The southern pine beetle was inactive, and ample rain curtailed damage from Ips.

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1960. FOREST INSECT CONDITIONS IN LOUISIANA, 1959. *In* Insect Conditions in Louisiana, 1959, pp. 27-31. Ent. Res. Dept. La. State Univ.
The black turpentine beetle continued troublesome, but other bark beetles were less destructive than usual. The red-headed pine sawfly again defoliated plantations in central parishes, and insecticidal treatment became necessary in several plantations. In early May, spider mites caused noticeable browning of pine foliage over several million acres in the northern parishes, and the forest tent caterpillar defoliated thousands of acres of bottom-land hardwoods west of New Orleans.

* ———

1960. WHAT'S THE PITCH WITH THE BLACK TURPENTINE BEETLE? South. Lumberman 200(2490): 35-36, illus.
Prevention and control—a popularized account.

———

1961. FOREST INSECT CONDITIONS IN LOUISIANA, 1960. *In* Insect Conditions in Louisiana, 1960, pp. 27-31. Ent. Res. Dept. La. State Univ.
Pine bark beetles were less destructive than in recent years but still killed more trees and required greater expenditures for control than all other forest insects. Defoliation of gums and other hardwoods by the forest tent caterpillar reduced growth and weakened stands over large areas. Woodborers caused lumber degrade by tunneling in living hardwoods.

———

1961. SOUTHERN STATES. *In* Forest Insect Conditions in the United States 1960, pp. 26-29, illus. U. S. Forest Serv.
Bark beetles and defoliators were the principal southern pests.

* ———CHELLMAN, C. W., and HOLT, W. R.

1958. INSECT ENEMIES OF SOUTHERN PINES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 164, 35 pp., illus.
Descriptions and drawings, and recommendations for control.

* ——— and OSTMARK, H. E.

1959. THE TRUTH ABOUT TESSIE TEREBRANS. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 174, 16 pp., illus.
Illustrated booklet on black turpentine beetle.

BONGBERG, J. W., and BENNETT, W. H.

1960. A STATUS REPORT ON FOREST INSECT CONDITIONS IN THE UNITED STATES IN 1959. FAO Plant Protect. Bul. 9(1): 1-10.
Bark beetles were the most destructive, but budworms, loopers, tussock moths, sawflies, spittlebugs, aphids, and others were damaging in many areas.

* BOYER, R. G.

1959. EVERGREEN BAGWORM. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 28, 2 pp., illus.
The bagworm is troublesome chiefly on ornamentals where it may be controlled by spraying or by handpicking of individual insects.

CHELLMAN, C. W.

1958. MISCELLANEOUS INSECT ENEMIES OF SOUTHERN PINES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 21, 14 pp., illus.
Superseded by Bennett, Chellman, and Holt, 1958.

COYNE, J. F.

1957. CONTROL OF CONE INSECTS IN SOUTHERN PINE. Fourth South. Forest Tree Impr. Conf. Proc. 1957: 64-66.
Natural control probably cannot be depended on.

* ———

1957. MIST BLOWER FOR SPRAYING SEED TREES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 111.
The blower sprayed 70-foot pines with BHC to protect flowers and cones from insects.

* ———

1959. NEODIPRION TAEDAE LINEARIS, A PEST OF LOBLOLLY AND SHORTLEAF PINES. U. S. Dept. Agr. Forest Pest Leaflet 34, 4 pp., illus.
In the south-central States this insect has caused huge losses by destroying the needles and thus retarding growth. DDT, applied from an airplane, controls it.

FERGUSON, E. R., and THATCHER, R. C.

1956. PALES AND HIS PALS. Forest Farmer 15(11): 10-11, 18, illus.
See next entry.

* Ferguson, E. R., and Thatcher, R. C.
1956. preplanting dip for controlling pales weevil. Jour. Forestry 54: 469-470, illus.
Dipping tops of pine planting stock in a 0.2-percent water suspension of BHC reduces attack.

* Harrington, T. A.
1955. tip moth and webworm in east texas. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 97.
Incidence of pine webworm was higher among loblolly seedlings in partial shade than in the open. Pine tip moth attack was not related to shading.

* Hay, C. J., and Morris, R. C.
1961. carpenterworm. U. S. Dept. Agr. Forest Pest Leaflet 64, 8 pp., illus.
Larvae degrade hardwood timber by tunneling. No method is known for preventing attack in forest stands.

Heller, R. C., Coyne, J. F., and Bean, J. L.
1955. airplanes increase effectiveness of southern pine beetle surveys. Jour. Forestry 53: 483-487, illus.
An aerial survey method developed in Texas was successfully used during the Mississippi beetle outbreak of 1952-53.

* Holt, W. R.
1957. controlling the texas leaf-cutting ant. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 19, 4 pp., illus.
Details of control with methyl bromide.

———
1961. metarrhizium anisopliae (metchnikoff) sorokin infecting larvae of the black turpentine beetle. Jour. Insect Path. 3:93.
The fungus had killed half the larval brood in a pine stump in southern Mississippi.

Lee, R. E., and Coyne, J. F.
1955. suggested guides for detecting the black turpentine beetle. Tex. Forest News 34(6): 4-5.
Where, how, and when to look for beetle infestations.

* ——— and Smith, R. H.
1955. the black turpentine beetle, its habits and control. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 138, 14 pp., illus.
A review.

Morris, R. C.
1955. insect problems in southern hardwood forests. South. Lumberman 191(2393): 136-139, illus.
Summarizes knowledge and indicates research needs.

———
1956. cottonwood leaf beetle in delta. Miss. Farm Res. 19(5): 3, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 537, 2 pp., illus.
Larvae and adults of Chrysomela scripta *damage cottonwoods and willows in nurseries and young plantations but can be controlled with endrin or dieldrin sprays.*

———
1956. insects and mississippi hardwoods. Miss. Farm Res. 19(2): 4, 7, illus.
See second entry above.

———
1957. hardwood insect problems in the delta. La. State Univ. Sixth Ann. Forestry Symposium Proc. 1957: 100-103.
Priority must be given to reducing damage from trunk borers in the living trees.

———
1958. insect pests of cottonwood. Miss. Farm Res. 21(5): 8, illus. *Also as* Miss. Agr. Expt. Sta. Inform. Sheet 591, 2 pp., illus.
Describes cottonwood twig borer, cottonwood leaf beetle, blotch leaf miner, cottonwood root and stem borer, and the cottonwood borer.

———
1958. test insecticides for twig borer. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 118.
See second entry below.

* ———
1959. insects cause degrade in ozark oaks. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 120.
Potential values of lumber from Ozark red oaks were reduced as much as $19 per MBF by degrade caused when insects attacked the living trees.

* ———
1960. control of cottonwood insects with a systemic insecticide. Jour. Forestry 58: 718, illus.
Before they were planted, cottonwood cuttings were dipped in a dust containing 44 percent Thimet, which protected the trees for one year against the twig borer and other insects.

* Moser, J. C.
1960. the case of the innocent ants. Forests and People 10(4): 30-33, illus.
Time and money intended for eradicating the destructive town ant are sometimes wasted on two relatively harmless species, Pogonomyrmex comanche *and* Trachymyrmex septentrionalis.

——— and Blum, M. S.
1961. the formicidae of louisiana. *In* Insect Conditions in Louisiana, 1960, pp. 48-50. Ent. Res. Dept. La. State Univ.
Six subfamilies, 43 genera, and 128 species occur in the State.

* Neelands, R. W.
1959. exposing the town ant. Forests and People 9(4): 18-19, 50, illus.
A colony of Atta texana *was exposed with bulldozers in an effort to determine its dimensions.*

*Orr, L. W., and Kowal, R. J.
1956. progress in forest entomology in the south. Jour. Forestry 54: 653-656, illus.
Land managers are realizing that insects cause much mortality and growth loss even when there is no severe outbreak. State, Federal, and private action is being taken to prevent and control damage, but efforts are handicapped by lack of basic research on the biologies and habits of the insects.

*Russell, T. E.
1958. cricket hazard. Forest Farmer 17(12): 12-13, 15, illus.
In central Louisiana the short-tailed cricket, Anurogryllus muticus *(DeG.) destroyed slash and longleaf pine seedlings. Damage was worst when other green vegetation was scarce.*

* ——— and Meanley, Brooke.
1957. listen for the crickets. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 110.
See entry above.

* Shoulders, Eugene.
1960. town ants damage slash pine plantation. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 125.
Defoliation killed many newly planted pines.

* Smith, R. H., and Lee, R. E.
1957. BLACK TURPENTINE BEETLE. U. S. Dept. Agr. Forest Pest Leaflet 12, 7 pp., illus.
Life history and habits, and control by natural means and with BHC.

* Thatcher, R. C.
1957. DAMAGE FROM PINE WEEVILS CAN BE AVOIDED. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 112.
See Thatcher, 1958 and 1960.

* ———
1957. PINE REPRODUCTION WEEVILS: PRELIMINARY RESULTS FROM 1955-1957 STUDIES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forest Pest Rptr. 18, 2 pp.
See Thatcher, 1958 and 1960.

———
1957. PREVENTING PALES DAMAGE TO PINE REPRODUCTION. La. State Univ. Sixth Ann. Forestry Symposium Proc. 1957: 112-120.
See Thatcher, 1958 and 1960.

* ———
1957. REFERENCES OF VALUE IN STUDIES OF INSECTS AFFECTING THE SOUTHERN PINES, AN ANNOTATED LIST. S. F. Austin State Col. Forestry Dept. Bul. 1, 37 pp.
Classified list.

* ———
1958. PREPLANTING DIPS REDUCE WEEVIL DAMAGE TO PINE SEEDLINGS. Jour. Econ. Ent. 51: 915-916, illus.
Dipping the tops of loblolly pine planting stock in a BHC suspension or both the tops and roots in an emulsion of aldrin or heptachlor or in a suspension of dieldrin, all at concentrations of 1 percent, materially reduced seedling mortality in a Texas test. BHC damaged seedlings whose roots were dipped in it.

* ———
1959. BHC TOTAL DIPS TOXIC TO PINE SEEDLINGS. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 123.
See Thatcher, 1960, "TOXICITY OF BHC . . . ."

* ———
1960. BARK BEETLES AFFECTING SOUTHERN PINES: A REVIEW OF CURRENT KNOWLEDGE. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 180, 25 pp.
Species characteristics, environmental influences on populations, predators and parasites, controls, research needs.

———
1960. BUGS IN YOUR PINES? SUCH DAMAGE CAN BE EXPENSIVE. Tex. Forests and Texans 1(4): 3-4, illus.
Signs of attack, methods of control.

* ———
1960. INFLUENCE OF THE PITCH-EATING WEEVIL ON PINE REGENERATION IN EAST TEXAS. Forest Sci. 6: 354-361, illus.
Where overstory pines were cut within 3 months of the date pine seedlings were planted, weevil feeding resulted in heavy mortality of planted seedlings; natural seedlings of comparable size were also attacked Damage was much less on areas cut in July before being planted in January, and negligible on areas cut in April or earlier. Incidence of attack did not significantly vary with the pine species in the test—loblolly, shortleaf, and slash.

* ———
1960. TOXICITY OF BHC TO LOBLOLLY PINE SEEDLINGS. Jour. Econ. Ent. 53: 175-176, illus.
Dipping both roots and tops of planting stock in 1 and 2 percent BHC suspensions reduced survival and growth for 2 years. Dipping only the tops avoided phytotoxic effects and still gave protection against pine reproduction weevils.

* Warren, L. O., and Coyne, J. F.
1958. THE PINE SAWFLY, NEODIPRION TAEDAE LINEARIS ROSS, IN ARKANSAS. Ark. Agr. Expt. Sta. Bul. 602, 23 pp., illus.
Nomenclature, history of infestation, hosts, life history, and controls.

PRODUCTS

* Blew, J. O., Jr., and Johnston, H. R.
1956. AN INTERNATIONAL TERMITE EXPOSURE TEST—TWENTY-SECOND PROGRESS REPORT. Amer. Wood-Preservers' Assoc., 10 pp.
Installations are in the Canal Zone, at Canberra, Australia, and in Transvaal, South Africa. An installation in Hawaii was closed in 1951.

* Johnston, H. R.
1956. SOIL POISONS FOR SUBTERRANEAN TERMITES. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 152, 8 pp. *Revised in 1960 as* SOIL TREATMENTS FOR SUBTERRANEAN TERMITES. 6 pp. *Also as* SOIL POISONS FOR THE PREVENTION AND CONTROL OF SUBTERRANEAN TERMITES IN BUILDINGS. Tenth Int. Cong. Ent. Proc. 4: 423-432. 1958.
Chemicals and dosages for preventing or controlling infestations in buildings.

* ———
1957. SOIL POISONS CAN THWART TERMITES. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 107.
See preceding entry.

* ———
1958. TESTS WITH SOIL POISONS FOR CONTROLLING SUBTERRANEAN TERMITES. Pest Control 26(2): 9, 11-16, illus.
See second entry above.

——— and Osmun, J. V.
1960. GOOD-BY TERMITE CONTROL? Pest Control 28(5): 62-63, illus.
"There seems to be a tendency on the part of certain manufacturers, formulators, and pest control operators to gradually reduce, for various reasons, the amount of chemical recommended for soil treatment. This is a short-sighted policy that is certain to result in loss of public confidence when treatment failures become common."

* ——— Smith, R. H., and St. George, R. A.
1955. PREVENTION AND CONTROL OF LYCTUS POWDER-POST BEETLES. South. Lumberman 190(2375): 72, 74, illus. *Also in* Pest Control 26(1): 39-42, illus. 1958.
Chemicals and dosages for protecting both green hardwood lumber and dry hardwood products.

Morris, R. C.
1957. LUMBER DEFECT—WHAT IS THE INSECT'S SHARE? South. Lumberman 195(2341): 26-27, illus.
Oak logs from Mississippi River bottoms were sawn and then graded twice—once with full cognizance of defects caused by insects, and once with such defects disregarded. At current market prices for the lumber, the defects reduced the value by $22 per M.

* Orr, L. W.
1959. PROTECTING FOREST PRODUCTS FROM INSECTS. Jour. Forestry 57: 639-640.
". . . Unless effective and practical measures for preventing deterioration of wood are developed and are accepted by industry and the American public, substitute materials are likely to be used for more and more of the purposes for which wood has been considered the best."

* St. George, R. A., Johnston, H. R., and Kowal, R. J.
1960. subterranean termites, their prevention and control in buildings. U. S. Dept. Agr. Home and Gard. Bul. 64, 30 pp., illus.
Detailed, illustrated advice on building practices and chemical soil treatments.

* Smith, V. K., Jr.
1961. what we still need to know about termites. Pest Control 29(4): 60.
Research into termite biology and behavior is likely to lead to improved controls.

MISCELLANEOUS

Blanchard, J. E.
1957. they'll take care of you . . . . Hulla-Ba-Lou 6(9): 2-3, illus.
If they will plant and care for trees, "folks looking forward to the sunset years can grow their own annuity."

Briegleb, P. A., and Pechanec, J. F.
1958. where we are now in forest research. Forest Farmer 18(2): 7-9, 28-29, illus.
Progress in southern forest research during the past 10 years, and a size-up of the job ahead.

* Burns, R. M.
1959. an incense cedar thrives in the south. South. Lumberman 199(2489): 124.
An incense cedar (Libocedrus decurrens) *that was planted 93 years ago in northern Mississippi is 42 inches in diameter and 80 feet tall.*

Cassady, J. T.
1960. how research can improve the forest industries of alabama. Ala. Forest Prod. 3(3): 11, 13, 17.
"The area of needed research is limited only by our own vision and the demand of the future competitive market. There is no real division between research and industrial practice—there is only a single continuing process beginning with the discovery of basic knowledge and ending with a useful product in the hands of a satisfied consumer."

Croker, T. C., Jr.
1956. research in the escambia forest. Ala. Lumberman 8(12): 7, 20-22, illus.
The Escambia Experimental Forest, near Brewton, Alabama, is concentrating on problems of natural regeneration, intermediate management, management alternatives, and range and wildlife.

Demmon, E. L., and Briegleb, P. A.
1956. progress in forest and related research in the south. Jour. Forestry 54: 674, 676, 678, 680, 682, 687-688, 690, 692.
Although southern forest research has been strengthened significantly in recent years, it is presently operating at only about one-third of the level regarded by the Research Committee of the Society of American Foresters as a minimum future standard.

Grano C. X.
1955. dust spheres: a report on their occurrence in southeast arkansas. Monthly Weather Rev. 83: 265-266, illus.
Microscopic wind-borne dust spheres of unknown origin were trapped on pollen slides.

Grosenbaugh, L. R.
1958. opportunities through research. Forest Farmer 17 (6): 11, 22, 24, illus.
Discusses major forest research programs at Southern Forest Experiment Station's branches at Crossett, Arkansas; Stoneville, Mississippi; and Alexandria, Louisiana.

Harrington, T. A.
1961. "single-needled" loblolly pine. Amer. Midland Nat. 66: 250, illus.
Each fascicle contains a single, straight, terete needle that consists of two to four separate needles tightly cohering.

Lehrbas, M. M.
1959. current forest products research and needs of southern forest industries. Ala. Forest Prod. 2(9): 60, 62-66, 68.
Production and use of lumber has not kept pace with population growth and expanding construction. Research is recommended for regaining markets or developing new uses for lumber.

McKnight, J. S.
1955. research: wellspring of progress. Forest Farmer 14(5): 12-13, 29-30, 32, illus.
Notes agencies doing forest research in Mississippi and lists main projects.

* ———
1961. the southern hardwood forestry group going strong after ten years. South. Lumberman 203(2537): 113-114, illus.
The 350 members hold regular field meetings to study hardwood management. They sponsor annual classes in the grading of hardwood logs and lumber, and have established a long-term timber growth study.

* Mignery, A. L.
1957. forest research expanded at sewanee. South. Lumberman 195(2437): 32-33, illus.
See next entry.

———
1958. research at sewanee—an appraisal. Forest Farmer 17(12): 8, 15-16, illus.
The Sewanee Research Center, recently established by the Southern Forest Experiment Station in cooperation with the University of the South, will serve the forest owners of central Tennessee and north Alabama. It has begun several promising studies of direct seeding of pine, release of pines from low-grade hardwoods, and plantation spacing.

———
1958. research moves ahead at sewanee. KTG Jour. 1(1): 12-13, 16, illus.
Early research has included the successful direct seeding of shortleaf and loblolly pine.

* Muntz, H. H.
1956. flat top experimental forest. U. S. Forest Serv. South. Forest Expt. Sta., 24 pp., illus.
Illustrated summary.

———
1958. u. s. forest service research in alabama, florida, and georgia. Southeast. Sect., Soc. Amer. Foresters, Forestry Newsletter 14(1): 25-29.
Outline of programs.

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1959. RESEARCH AT WORK. Forest Farmer 18(7): 16, 24, 26, illus.

Private, Federal, and State forest research in Alabama.

* ORR, L. W.

1957. A NEW INSECT REPELLENT. U. S. Forest Serv. South. Forest Expt. Sta. South. Forestry Notes 108.

Diethyltoluamide, applied to skin or clothing, repels chiggers, ticks, and fleas.

* SOUTHERN FOREST EXPERIMENT STATION.

1955. PUBLICATIONS OF THE SOUTHERN FOREST EXPERIMENT STATION, JULY 1921 THROUGH DECEMBER 1954. U. S. Forest Serv. South. Forest Expt. Sta. Occas. Paper 108 (rev.), 128 pp.

Comprehensive list, classified by subject matter, but without abstracts.

* ———

1960. PROGRESS IN SANDHILLS FORESTRY AND THE ROAD AHEAD. Published cooperatively with Florida Board of Forestry. 10 pp., illus.

Pictorial review of research to re-establish pines on the deep sands of western Florida.

STEPHENSON, G. K.

1955. BETTER SEEDLING SURVIVAL IS GOAL OF NEW RESEARCH. Tex. Forest News 34(3): 3, 7, illus.

The major efforts of the East Texas Research Center will be directed toward a prompt, dependable means of securing pine regeneration.

———

1955. FORESTRY AND EAST TEXAS YOUNG PEOPLE. Paper read at Forestry Short Course for Vocat. Agr. Teachers. S.F. Austin State Col., 12 pp.

"All east Texans are neighbors to forestry. Our young folks are growing up in the shadow of great timber farms. We hope in the future they will see more and more good forestry on small holdings and on farm woods. Our schools owe them a knowledge of what these forests mean, and how and why they are operated."

* ———

1955. THE SAN JACINTO EXPERIMENTAL FOREST. U. S. Forest Serv. South. Forest Expt. Sta., 13 pp., illus.

Information on methods-of-cutting study begun during 1938 in a shortleaf-loblolly stand of southeast Texas.

———

1958. FEDERAL FOREST RESEARCH AT S. F. A. Tex. Tally (Yearbook, Forestry Dept., S. F. Austin State Col.) 1: 21-23, illus.

Students at Austin College can supplement their studies by observing the work on the three experimental forests of the East Texas Research Center.

* WOODS, F. W.

1956. ILEX GLABRA FORMA LEUCOCARPA: A WHITE-FRUITED HOLLY. Rhodora 58(685): 25-26, illus.

The specimen was found near Marianna, Florida.

* ———

1960. BIOLOGICAL ANTAGONISMS DUE TO PHYTOTOXIC ROOT EXUDATES. Bot. Rev. 26: 546-569.

Review of literature.

——— and DAWSEY, C. D.

1955. A PSEUDOMONOFOLIUS SAND PINE. Bot. Gaz. 116: 292, illus.

What appear to be single needles are formed by 2 separate needles cohering by their adaxial surfaces.

SERIAL PUBLICATIONS

OCCASIONAL PAPERS

*138. THE BLACK TURPENTINE BEETLE, ITS HABITS AND CONTROL. R. E. Lee and R. H. Smith. 1955.

*139. FORAGE WEIGHT INVENTORIES ON SOUTHERN FOREST RANGES. R. S. Campbell and J. T. Cassady. 1955.

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*153. POLE GROWER'S GUIDE. H. L. Williston. 1957.

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*162. CATTLE GRAZING IN LONGLEAF PINE FORESTS OF SOUTH MISSISSIPPI. L. F. Smith, R. S. Campbell, and C. L. Blount. 1958.

*163. MANAGING A SMALL FOREST IN EAST TEXAS. C. B. Gibbs. 1958.

*164. INSECT ENEMIES OF SOUTHERN PINES. W. H. Bennett, C. W. Chellman, and W. R. Holt. 1958.

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*168. INTENSITY OF PREPLANTING SITE PREPARATION REQUIRED FOR FLORIDA'S SANDHILLS. R. L. Scheer and F. W. Woods. 1959.

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*175. SELECTIVE CONTROL OF CULL HARDWOODS IN EAST TEXAS. G. K. Stephenson and C. B. Gibbs. 1959.

*176. GUIDE FOR EVALUATING SWEETGUM SITES. W. M. Broadfoot and R. M. Krinard. 1959.

*177. WEIGHT-SCALING SOUTHERN PINE SAW LOGS. Sam Guttenberg, D. L. Fassnacht, and W. C. Siegel. 1960.

*178. FIELD GUIDE FOR EVALUATING COTTONWOOD SITES. W. M. Broadfoot. 1960.

*179. COTTONWOOD PLANTATIONS FOR SOUTHERN BOTTOM LANDS. L. C. Maisenhelder. 1960.

*180. BARK BEETLES AFFECTING SOUTHERN PINES: A REVIEW OF CURRENT KNOWLEDGE. R. C. Thatcher. 1960.

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*182. EXPLORATORY RELATIONS OF STAND GROWTH TO MEASURABLE ELEMENTS OF STAND STRUCTURE. Clement Mesavage. 1961.

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*187. FOREST TAXATION IN LOUISIANA. W. C. Siegel and J. D. Perry. 1961.

*188. GUIDELINES FOR DIRECT-SEEDING LOBLOLLY PINE. W. F. Mann, Jr., and H. J. Derr. 1961.

*189. GROWTH OF LONGLEAF PINE SEEDLINGS UNDER LARGE PINES AND OAKS IN MISSISSIPPI. L. F. Smith. 1961.

*190. GUIDE FOR EVALUATING CHERRYBARK OAK SITES. W. M. Broadfoot. 1961.

*191. EXTRACTING, PROCESSING, AND STORING SOUTHERN PINE POLLEN. E. B. Snyder. 1961.

*192. FOREST GENETICS PUBLICATIONS BY THE SOUTHEASTERN AND SOUTHERN FOREST EXPERIMENT STATIONS THROUGH 1961. B. W. Henry, K. W. Dorman, and P. C. Wakeley. 1961.

SOUTHERN FOREST PEST REPORTER

Formerly SOUTHERN FOREST INSECT AND DISEASE REPORTER.

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	*Issue 26, July 8,	8 pp.
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1960.	*Issue 29, March 15,	7 pp.
	*Issue 30, June 21,	7 pp.
	*Issue 31, Nov. 1,	6 pp.
1961.	*Issue 32, Feb. 15,	7 pp.
	*Issue 33, June 20,	5 pp.

This series carried current reports on forest insects and diseases in the Midsouth. It was discontinued with No. 33. A series of the same title but with independent numbering is being issued by the Southern Region, U. S. Forest Service, 50 Seventh St., N. E., Atlanta 23, Ga.

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1956	*101	*102	*103	*104	105	*106
1957	*107	*108	*109	*110	*111	*112
1958	113	114	*115	*116	*117	118
1959	*119	*120	121	122	*123	*124
1960	*125	*126	*127	*128	*129	*130
1961	*131	*132	*133	*134	*135	*136

FOREST SURVEY RELEASES

75. FORESTS OF LOUISIANA, 1953-54. Southern Forest Experiment Station. 1955.

76. 1954 PULPWOOD PRODUCTION IN THE SOUTH. W. S. Stover and J. F. Christopher. 1955.

*77. FORESTS OF EAST TEXAS, 1953-55. Southern Forest Experiment Station. 1956.

*78. FORESTS OF THE MISSISSIPPI DELTA. H. S. Sternitzke and J. A. Putnam. 1956.

*79. FORESTS OF EAST OKLAHOMA, 1955-56. Southern Forest Experiment Station. 1957.

*80. 1956 PULPWOOD PRODUCTION IN THE SOUTH. J. F. Christopher and Martha E. Nelson. 1957.

*81. MISSISSIPPI FORESTS. Southern Forest Experiment Station. 1958.

*82. SOUTHERN PULPWOOD PRODUCTION, 1958. J. F. Christopher and Martha E. Nelson. 1959.

*83. SOFTWOOD DISTRIBUTION MAPS FOR THE SOUTH. P. L. Janssen and M. R. Weiland. 1960.

*84. ARKANSAS FORESTS. H. S. Sternitzke. 1960.

*85. SOUTHERN PULPWOOD PRODUCTION, 1960. J. F. Christopher and Martha E. Nelson. 1961.

ANNUAL REPORTS

1954	*1958
1955	*1959
1956	*1960
1957	*1961

INDEX OF AUTHORS